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February 16th 1888

ICONES OBSTETRICÆ.

A SERIES OF SIXTY PLATES

ILLUSTRATIVE OF THE

ART AND SCIENCE OF MIDWIFERY,

IN ALL ITS BRANCHES,

BY

A. L. MOREAU,

PROFESSOR OF MIDWIFERY TO THE FACULTY OF MEDICINE, PARIS.

EDITED WITH PRACTICAL OBSERVATIONS AND TABLES,

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LONDON:

HIPPOLYTE BAILLIÈRE, 219, REGENT STREET,

Foreign Bookseller to the Royal College of Surgeons, London, & to the Royal Society.

LEIPZIG: T O. WEIGEL.

MDCCCXLII.

LONDON:
SCHULZE AND CO. PRINTERS, 13, POLAND STREET.

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The Icones Obstetricæ, or Atlas of Midwifery commenced by M. Moreau in 1838, and completed in 1840, is one of the most original, the most artistical, and at the same time the most practical series of obstetrical plates which has ever been published. It contains one hundred and sixty-six finished, and twenty-five outline illustrations, and is worthy of the country which has produced Ambrose Paré, Mauriceau and Levret. This Atlas deserves to hold an honorable place by the side of those splendid works, with which artists of our own country have enriched obstetric medicine, and perpetuated the labours of Smellie and William Hunter. In presenting the Atlas of M. Moreau to the medical public, with explanations in the English language, the Editor has striven to make it as extensively useful and practical as possible. For this purpose he has added, 1st. A Series of Remarks, in which it has been his aim to comprise whatever his experience led him to believe would be most useful at the bedside, embracing considerations in anatomy and physiology, in the mechanism of parturition in general, and in the pathology of those parts of the female generative system, which not unfrequently complicate and render dangerous the important act of child-birth. 2ndly. A Series of Tables at the termination of each series of plates illustrating the great subdivisions of obstetric science, in which it has been his object to supply a large amount of that information, which can be obtained from the practice of others, which is so valuable, and indeed so necessary for safe conduct in practice, till we have acquired experience for ourselves. That he has fully realized the objects proposed, the Editor can scarcely venture to hope; but he can truly state that he has applied himself with zeal and diligence to the task. Personally engaged for many years in obstetric practice, and intimately acquainted with many of the last and present generation of practitioners, he has endeavoured to keep himself free from every doctrine of any particular school that has not been tested and confirmed by trustworthy observation, or admitted by general experience. He conscientiously believes, that the reasoning and facts adduced in the course of these remarks and tables are essentially correct, and that as a whole they present a compendium of that eclectic and enlightened system of obstetric practice, which though unwritten is hourly pursued, and is daily receiving improvement from the intelligent body of general practitioners, from whom our most distinguished accoucheurs and obstetrical writers have sprung, and to whose care the welfare and lives of a large majority of the population of the British Islands are entrusted from the cradle to the grave. The names of Smellie, William Hunter, Denman, Rigby and Gooch, are evidence enough, without alluding to the living, of the correctness of this remark.

J. S. STREETER.

20, *Harpur Street,*
Bloomsbury,
November, 1841.

INDEX

OF THE PLATES, OF THEIR CONTENTS, AND OF THE EDITORIAL REMARKS.

PLATES.	FIGURES.	REMARKS.
Pl. 1. Individual bones of the pelvis.	Fig. 1. Front view of sacrum. — 2. Back do. — 3. Right side do. — 4. Upper surface. — 5. Coccyx, posterior surface. — 6. Right ileum, side view, external. — 7. Ileum, front view do. — 8. Ileum do internal.	
— II. Pelvis as a whole.	— 1. Male pelvis, front view. — 2. Female do. do. — 3. Fœtal do. at full term do.	
— III. Standard female pelvis and its dimensions.	— 1. Standard female pelvis (brim). — 2. do. outlet. — 3. Outline of brim. — 4. do. outlet.	
— IV.	— 1. Posterior half of adult female pelvis. — 2. Anterior do. — 3. Right lateral half do. — 4. Outline of left do. — 5. Section of the pelvis in the plane of the brim (Chaussier).	
— V.	— 1. Direction and axes of the pelvis (perpendicular section in the median plane).	
— VI. Abnormal pelves.	— 1. Pelvis of excessive size. — 2. do. diminutive do. — 3. Outline of brim. — 4. do. outlet. — 5. do. brim. — 6. do. outlet.	On unusually large and small pelves.
— VII. Deformed pelves.	— 1. Pelvis contracted at brim. — 2. Pelvis enlarged at outlet. — 3. Left lateral half. — 4. Outline of the brim. — 5. do. outlet.	On the causes and kinds of deformity of the pelvis in general and on the period of pregnancy at which the induction of premature labour is necessary in particular degrees of deformity of the brim.
— VIII.	— 1. Angular deformed pelvis contracted in all its dimensions, (brim). — 2. Front view do. — 3. Outlet do. — 4. Outline of brim. — 5. Outline of outlet.	On the particular deformity.
— IX.	— 1. Angular deformed pelvis (brim). — 2. Outline of brim. — 3. do. outlet. — 2. Oblique oval pelvis (brim) — 4. Outline of brim. — 5. do. outlet.	On the particular deformity. On the oblique oval pelvis described by Naegele, with a short abstract of his views.
— X.	— 1. Angular deformed pelvis from a rickety subject (brim). — 2. Do. (outlet). — 3. Outline of brim. — 4. do. outlet. — 5. Elliptical variety of deformed pelvis. — 6. Outline of brim. — 7. do. outlet.	On the particular deformity.
— XI.	— 1. Pelvis with fibro-cartilaginous tumour (brim). — 2. Pelvis cut so as to shew a large tumour adhering to the symphysis pubis (anterior half).	On morbid growths within the pelvis generally which obstruct child-birth, and on fibro-cartilaginous and ossified tumours in particular.

PLATES.	FIGURES.	REMARKS.
Pl. XII.	Fig. 1. Pelvis deformed and contracted in its transverse diameter (brim).	On the particular deformity.
	— 2. Outline of brim.	
	— 3. do. outlet.	
	— 4. Right half of the pelvis, acetabulum fractured and head of the femur driven in.	On fracture of the pelvis, and its uniting so as to impede child-birth.
— XIII.	— 1. Deformity of pelvis at the lower outlet and abnormal inclination (brim).	On the particular deformity.
	— 2. The same (outlet).	
	— 3. Outline of brim.	
	— 4. do outlet.	
— XIV.	— 1. Side view of same (externally).	On the particular deformity.
	— 2. do. (internally).	
	— 3. Another view of the same.	
— XV.	— 1. Deformed pelvis with heart-shaped brim (brim).	On the particular deformity.
	— 2. Front view of the same showing the abnormal inclination.	
	— 3. Outline of brim.	
	— 4. Outline of outlet.	
— XVI. Muscles, blood vessels, and nerves of the perineum.	— 1. Perineum of the adult female seen from below and dissected, so as to show the muscles, blood vessels, and nerves that supply the external organs of generation.	On laceration of the perineum, sanguineous infiltration of the labium during child-birth, and varicose affections of the labium and genital organs.
— XVII. Interior of the pelvis.	— 1. View of the interior of the pelvis, with the soft parts that line it, as seen from the abdomen after the peritoneum has been removed.	On the pelvis covered with the soft parts.
— XVIII.	— 1. Side view of the interior of the pelvis, the viscera, peritoneum and the opposite half being removed at the symphysis pubis, and left sacro-iliac articulation, so as to show the muscles, blood vessels, and nerves, with the urinary, genital and intestinal apertures.	On the œdema and varicose affections of the lower extremities which are produced by pregnancy.
— XIX. Viscera of the pelvis in situ	— 1. The viscera of the pelvis seen from above, and as they are naturally covered by the peritoneum.	On the importance of the sympathy which exists between the uterus, the bladder and the rectum. The influence this sympathy exerts over the administration of remedies, both in the unimpregnated and gravid states of the uterus. On the effects also of the retention of indurated fœces in the rectum, of urine in the bladder or the presence of a calculus in that organ upon the process of child-birth.
— XX.	— 1. Side view of the interior of the pelvis, the same as represented in Pl. XVIII, but the peritoneum preserved, and the viscera, the bladder, uterus and lower part of the rectum divided in the median plane, so as to show the relative situation of these organs, and the mode and extent with which they are invested by the peritoneum.	On pregnancy complicated with uterine tumour, enlarged ovary or any other morbid growth occupying the pelvis.
— XXI. Anatomy of the uterus and its accessory organs.	— 1. The uterus and its accessory organs in their natural condition, and the vagina laid open by an incision in the median line.	On the peculiar tissue of the vagina, and the internal membrane of the uterus.
	— 2. Transverse section of the uterus, and upper part of vagina, so as to show the posterior halves.	
	— 3. Section of the uterus in the median line.	
	— 4. Perpendicular section of the ovary.	
	— 5. Canal of the left ovary opened throughout its entire length.	
— XXII. Muscular structure and blood vessels of the gravid uterus.	— 1. Anterior surface of the uterus in a female who died two days after delivery, the peritoneum partly removed so as to show the muscular fibres and the appendages.	On the peculiar tissues of the uterus, the seat of pain in the first stage of labour, the mode in which hæmorrhage from this organ is naturally restrained and the effect of compression of the aorta.
	— 2. The anterior surface of the same uterus with the blood vessels injected.	
— XXIII.	— 1. Uterus of an adult female who died forty-four hours after delivery, in order to show the vascular structure and the open orifices of the vessels in the interior of the organ.	On the arrangement of the muscular fibres, and the efficiency of the uterus as an organ for expelling the fœtus and restraining hæmorrhage from those maternal vessels which are necessarily opened by the separation of the placenta. The uterus more essentially necessary for this purpose than as a nidus for the reception, growth and perfection of the fœtus.
	— 2. The same uterus inverted and seen laterally, so as to show the circular distribution of the muscular fibres round the neck of that organ and round the orifice of the Fallopian tube (the detrusor placentæ of Ruysch).	
— XXIV. Absorbent vessels of the gravid uterus.	— 1. Absorbent vessels of the uterus and its appendages injected in a female who died a short time after delivery. The symphysis has been removed and the uterus is drawn forwards.	On inflammation of the absorbents as a cause of puerperal fever.
— XXV. Nerves of the gravid uterus.	— 1. Nerves of the uterus and pelvic viscera, represented in a female who died four days after delivery.	On the effects of the gravid uterus on the nerves of the pelvis and lower extremities, before and during labour, and on the special nervous system of the uterus in the gravid and unimpregnated state, as demonstrated by Dr. Robert Lee.
— XXVI. Irregular formations of the uterus and vagina.	— 1. Double uterus of a female who had borne a child in each, with a straight band and double cicatrix, the remains of a partition which originally divided the vagina in the median line, but was torn during parturition.	On the cause and principal kinds of irregularity and malformation of the uterus and vagina, and the effects which they produce upon pregnancy and parturition.
	— 2. Single uterus with the vagina double through the greater part of its length.	

PLATES.	FIGURES.	REMARKS.
Pl. XXVII. Aborted ova.	Fig, 1. — 2. — 3. — 4. — 5. — 6. — 7. — 8. Views of an ovum presumed to have been expelled four weeks after conception.	On the abnormal condition of most early ova expelled by abortion, and the practical importance of ascertaining the cause of abortion in every instance, as a means of directing the after-treatment, and preventing the occurrence of miscarriage in the succeeding pregnancy.
	— 9. — 10. — 11. — 12. Views of an ovum presumed to be of the same age.	
— XXVIII.	— 1. — 2. Views of an ovum about nine weeks, copied from Dr. W. Hunter's 33rd plate. — 3. An ovum about five weeks. — 4. — 5. — 6. Views of an ovum about six weeks.	
— XXIX.	— 1. — 2. — 3. — 4. — 5. — 6. — 7. — 8. — 9. — 10. Views of an ovum expelled about five weeks after conception. — 11. Fœtus of natural size at about three months gestation.	On the difficulty of determining the age of aborted ova.
— XXX. Vascular connection between the uterus and placenta.	— 1. Uterus with the placenta of a female who died of convulsions near the close of pregnancy, injected while adherent. A portion of the placenta has been turned up. The injection thrown in by the uterine arteries and veins, has reached the placenta without penetrating the umbilical vessels. The utero-placental vessels and terminal sinus of the placenta are distinctly shown.	On the utero-placental vascular communication, the manner in which the placenta acts as a primordial lung to the fœtus, illustrated by references to comparative anatomy and the practical importance of considering it as an organ of respiration, as well as one of nutrition.
— XXXI. Osseous system of the fœtus.	— 1. Fœtal skeleton. — 2. — 3. — 4. — 5. Views of the fœtal cranium, to show its obstetric diameters, the sutures, and fontanelles.	On the dimensions of the fœtal head and the fontanelles, with the mode of distinguishing the anterior from the posterior. Table of the measurements of the fœtal head at different ages. Hydrocephalus of the fœtal head and its influence over the labour.
— XXXII. Vascular system of the fœtus.	— 1. — 2. — 3. — 4. — 5. View of the thorax and abdomen and such portions of their organs as show the peculiarities of the vascular system.	On the large size of the umbilical arteries, and the character and importance of the sounds of the fœtal heart, as a means of determining the existence of pregnancy and the vitality of the child before and immediately after birth.
— XXXIII.	— 1. — 2. — 3. — 4. Views of the manner in which the fœtal cranium and pelvis are placed in relation to each other in the position the cranium occupies in the 4 direct presentations of the vertex.	On the diagnosis of vertex presentations. Mechanism of parturition generally, and of the occipito-cotyloid, the fronto-cotyloid, and face presentations in particular.
— XXXIV. Presentations of the vertex.	— 1. — 2. — 3. — 4. Views of the same in the four oblique presentations of the vertex.	On the mechanism of vertex presentations, and those deviations in the presentation of the vertex, which are supposed to retard and render labour difficult.
— XXXV.	— 1. The abdomen laid open to show the uterus at the full term of gestation and the relative situation of the gravid uterus to the rest of the abdominal viscera.	On the changes in the situation of the Fallopian tubes, ovaries, broad ligaments and urethra, produced by the enlargement of the gravid uterus. On obliquities of the uterus in general, and of anteversion and retroversion especially.
— XXXVI.	— 1. The same female with the anterior half of the uterus removed to show the position of the child, which is seen lying as in the right fronto-cotyloid presentation.	On the true position which the fœtus occupies in the uterus, and the importance of this knowledge in studying the mechanism of parturition, and in rendering manual or instrumental assistance.
— XXXVII. Mechanism of labour in presentation of the vertex.	Mechanism of labour in the first oblique or left occipito-cotyloid presentation of the vertex. — 1. Situation of the head and body of the fœtus, at the termination of the first period of the second stage of labour, before the head has executed its turn. — 2. The second period of the second stage of labour, when the head has executed the movement of lateral rotation in the cavity of the pelvis.	On the stages of labour and the processes which take place during the first and second stage. Tables illustrating the time usually occupied by labours from Collins and Lachapelle, and of first labours from Merriman.
— XXXVIII.	— 1. The third period of the second stage of labour when the head is commencing the movement of extension on the spine, by which it is rotated round the arch of the pubes as a centre. — 2. The fourth period when the head becomes disengaged from the vulva and resumes its natural and untwisted position.	On laceration of the perineum and the causes that predispose to its occurrence. The influence which the form of the arch of the pubis exerts over the duration of labour. Mechanism of the passage of the vertex through the pelvis, when the chin separates at too early a period from the chest. History of a natural labour.
— XXXIX. Mechanism of labour where the face is turned to the pubes.	— 1. The second period (corresponding to Fig. 2, Pl. XXXVII) of the second stage of labour when the head presents in the occipito-sacral position and in the fronto-cotyloid presentations (face to the pubes). — 2. The third period of the same.	On the classification of the several presentations of the fœtus. Table of presentations admitted by Lachapelle and also the modification adopted by Dugés.
— XL. Presentation of the face, and the mechanism of labour, when that part of the fœtus presents.	— 1. The first period of the second stage of labour when the head is entering the pelvis with the face moving forwards through it as the presenting part. — 2. The second period of the same.	On the cause of face presentations and the mode in which vertex presentations at the brim occasionally become face presentations at the outlet. The propriety of trusting the delivery of the child to the natural efforts. The effect on the features of the child.

PLATES.	FIGURES.	REMARKS.
Pl. XLI. Presentation of the breech or lower extremity, and the mechanism of labour when those parts of the fœtus presents.	Fig. 1. First period of the first species of presentation of the nates. — 2. First period of the second stage of labour in the second species of presentation of the knees.	On the diagnosis and management of breech and footling cases, so as to obviate as far as possible the danger to the child. Division into two varieties for practical purposes and general description of the mechanism of labour in each.
— XLII.	— 1. First period of the second stage of labour in the third species of presentation of the feet. — 2. First period of the second stage of labour in the fourth species of presentation of the breech.	
— XLIII.	— 1. Second period of the second stage of labour in the first kind of presentation of the breech. — 2. Third period of the same.	On the importance of studying the mechanism of this species of natural labour, because it is the one imitated when labour is forced and delivery accomplished by version. General directions for the management of ordinary and difficult labours under presentations of the breech or lower extremities.
— XLIV.	— 1. Fourth period of the same. — 2. Fifth period of the same.	On the importance of accurate and extensive statistical records. Tables illustrating the comparative frequency of the several presentations and many circumstances connected with plural gestation.
— XLV. ARTIFICIAL DELIVERY. Version in the 1st oblique presentation of the vertex.	— 1. First stage. Introduction of the hand within the uterus. — 2. Second stage of version. Carrying up the hand in search of the feet.	On the operation of version generally, the cases to which it is adapted, mode of performing and dangers.
— XLVI.	— 1. Third stage. Seizing of the feet. — 2. Fourth stage. Bringing the feet down into the vagina and turning the child.	On the special employment of version, as a means of procuring the delivery of the second child in twin cases. General management of twin labours.
— XLVII.	— 1. Third stage modified. Seizing first one foot, bringing it down, fixing it with a noose and then fetching the other. — 2. Fifth stage. Extracting the child by drawing with the feet.	On the special employment of version as a means of procuring delivery in labours complicated with rupture of the uterus or vagina. General management of this species of complex labour.
— XLVIII.	— 1. Sixth stage. Extracting the child by drawing with the nates. — 2. Seventh stage. Bringing down the funis so as to remove all tension from the umbilicus.	On the special employment of version in labours complicated with hæmorrhage before the birth of the child. General management of hæmorrhagic labours. Table illustrating the general and relative frequency of the various species of complex labour.
— XLIX.	— 1. Eighth stage. Bringing down the left arm — 2. Ninth stage. Bringing down the right arm.	On the modification of version employed by Dr. Breen of Dublin, including his remarks upon the natural position of the fœtus in utero and the mechanism of the operation of version.
— L.	— 1. Tenth stage. Turning the face into the hollow of the sacrum. — 2. Eleventh stage. Bringing the head through the vulva.	On the modification of version adopted by Mr. Radford of Manchester, including a description of the comparative danger of the different presentations to the child, and the relative measurements of the presenting parts of the child in head, breech and footling presentations. On the different classes of præternatural presentations. The "spontaneous evolution," or mechanism of natural labour in arm presentations. Version at an early period always desirable in consequence of the great fatality of the natural process to the mother and child. History of the management of arm cases and the progressive invention and practice of delivery by decapitating and exviscerating the fœtus.
— LI. Presentation of the right shoulder and arm.	— 1. First kind of presentation of the right shoulder. — 2. Second kind of presentation of the right shoulder.	
— LII. ARTIFICIAL DELIVERY. Version in shoulder presentations.	— 1. First stage of version in the second kind of presentation of the right shoulder. — 2. Third stage of version in the same presentation.	On the management of simple and difficult cases of arm presentations. Mode of lessening the thorax and decapitation.
— LIII.	— 1. Second stage of version in the second kind of presentation of the left shoulder. — 2. Fourth stage of version in the same presentation.	Statistics of version from Dr. Fleetwood Churchill and comparative mortality of the operation to the mother and child.
— LIV. ARTIFICIAL DELIVERY. The forceps and the mode of their application.	— 1. The forceps locked. — 2. The key for locking the blades. — 3. Application of the male or under branch of the forceps after the vertex has cleared the orifice of the uterus, and descended into the cavity of the pelvis, and when it has executed the turn which brings the face into the hollow of the sacrum and the occiput under the arch of the pubes, viz. at the termination of the second stage of labour (Pl. XXXVII, fig. 2).	On the usual position of the female in Great Britain during natural and artificial delivery. The use of the forceps in difficult breech cases as employed by Dr. Hamilton of Edinburgh. Numerous varieties of the forceps and reasons for preferring the British to the French form of instrument.
— LV.	— 1. The male or under branch of the forceps. — 2. The introduction of the female or upper branch of the forceps above the male branch which is already applied.	On the causes and occasional necessity of artificial delivery. Means of effecting this and cases to which they are respectively applicable. Early history of obstetric instruments and on the invention and varieties of the forceps and lever.
— LVI.	— 1. The forceps are seen locked and applied over corresponding sides of the head, while the handles are grasped so as to apply extracting force in the direction of the pelvic axis. — 2. Intro-pelvimeter and callippers of M. Boivin.	On the delivery by forceps and the cases to which their use is adapted. Mode of employing them. The signs which indicate the life or death of the child. The great utility of the stethoscope. On pelvimeters, their limited use and great inferiority to the finger. On the tumour which generally forms on the vertex in difficult labour.
— LVII.	— 1. The head has been made to execute the movement of extension on the spine by traction with the forceps, which was formerly delineated (Pl. XXXVIII, fig. 1 & 2).	Ou inertia uteri. The secale cornutum, its early history as a means of assisting delivery. Cases in which it is applicable and reason why it is dangerous to the child. Doses and modes of administration. The abuse and use of opiates. General history, management, and table illustrative of labours complicated with convulsions.

PLATES.	FIGURES.	REMARKS.
	Fig. 2. The perforator of Mauriceau. — 3. The perforating scissars of Smellie with the stop.	
Pl. LVIII.	— 1. Application of the forceps in the left occipito-cotyloid presentation before the head has executed the turn in the pelvis. — 2. — 3. — 4. — 5. Forms of pessaries employed by M. Moreau.	On labour complicated with hæmorrhage. Table illustrating the same. Dr. E. Kennedy's mode of using the plug in partial placental presentation. On prolapsus of the funis, of an arm or foot of the child before the presenting part. Management of labours complicated with prolapsus. Table illustrating prolapsus of the funis. On malposition of the head as a cause of instrumental labour.
— LIX.	— 1. Application of the forceps in the third direct position of the vertex while the head is still above the brim of the pelvis, the blades of the forceps being applied over the sides of the head. — 2. — 3. — 4. — 5. — 6. Forms of pessaries employed by M. Moreau.	On disproportion between the size of the child's head and that of the pelvis of the parent. General management of cases of disproportion. The principles which are to be kept in view in administering the secale cornutum, in using the lever and forceps, and in delivering by the perforator and crotchet. Remarks of Dr. Collins on instrumental labour. Table showing the frequency of instrumental cases.
— LX.	— Application of the forceps where the body is delivered, but the head remains locked in the pelvis. — 1. Forceps applied over the sides of the vertex where the vertex is in the hollow of the sacrum, and the face directed backwards. — 2. Forceps applied under the same circumstances, where the face is turned towards the pubes.	Synoptical view of the different degrees of deformity of the pelvis, and the modes of delivery which they severally require. The symmetry and relative frequency of deformity of the pelvis. Smallest space through which a full grown fœtus can pass without mutilation. Cases of deformed pelvis combined with arm presentation. The operations of embryulcia, the induction of premature labour, and the Cæsarian section. Statistical table illustrating the frequency and fatality of these operations to both mother and child. Tables exhibiting a synopsis of the practice adopted by Collins, in the Lying-in Hospital of Dublin, and by Lachapelle at the Maison d'Accouchemens.

Fig: 1.

Fig. 5.

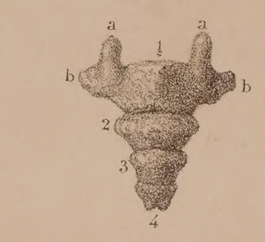

Fig. 2.

Fig: 3.

Fig: 4

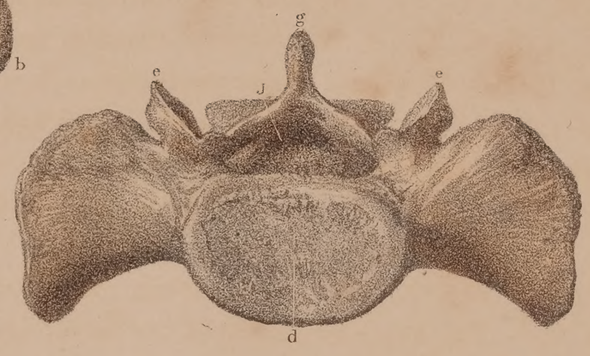

Fig: 7.

Fig: 6.

Fig: 8.

Dessiné d'après nature, par Emile Beau.

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PLATE I.

STRUCTURE OF THE PELVIS OF AN ADULT FEMALE.

(HALF SIZE.)

OS SACRUM.

Figure 1.—Anterior aspect.
Figure 2.—Posterior aspect.
Figure 3.—Lateral aspect.
Figure 4.—Base.

From a to a^5. *Fig.* 1. The five bodies of the sacral vertebræ forming so many superficial transverse sulci or depressions.

From b^1 to b^4. *Fig.* 1. The four transverse prominencies indicating the junctions of the bodies of the sacral vertebræ.

From c^1 to c^4. *Fig.* 1. The four anterior sacral foraminæ.

d. *Fig.* 1, 3, 4. The sacro-vertebral articular surface.

e. *Fig.* 1, 2, 3, 4. The articular processes.

f. *Fig.* 1, 3. Apex of the sacrum articulating with the base of the os coccygis.

From g^1 to g^4. *Fig.* 2. The sacral spines in continuation of the vertebral spinous processes.

From h^1 to h^4. *Fig.* 2. The four posterior sacral foraminæ.

i. *Fig.* 1, 4. The superior orifice of the sacral canal.

j. *Fig.* 2. The inferior orifice of the sacral canal.

k, k. *Fig.* 2. Cornua of the sacrum. They bound the termination of the sacral canal laterally.

l. *Fig.* 3. Ear-shaped surface articulating with the os ilium.

m, m. *Fig.* 2. Sacral groove, gutter or furrow.

OS COCCYGIS.

Fig. 5. Posterior surface.

1, 2, 3, 4. The four pieces of the os coccygis.

a, a. *Fig.* 5. The coccygeal cornua.

b, b. Tubercles of the coccyx. Final rudiments of the vertebral apophyses.

OS INNOMINATUM.

Figure 6, 7. External or femoral surface.
Figure 8. Internal or pelvic surface.

a. *Fig.* 6, 7. External iliac fossa.

From b to c. *Fig.* 6, 7, 8. Crista ilii.

From b to d. *Fig.* 6, 7, 8. Notch which separates the anterior and superior spinous process of the ilium from the anterior and inferior spinous process of the same bone.

From c to e. *Fig.* 6, 7, 8. Notch which separates the posterior and superior iliac spine from the posterior and inferior iliac spine.

From e to f. *Fig.* 7, 8. Great sciatic notch.

From f to g. *Fig.* 7, 8. Small sciatic notch.

From g to h. *Fig.* 6, 7. Tuberosity of the ischium.

From h to j. *Fig.* 6, 8. Ascending ramus of the ischium.

From j to k. *Fig.* 6, 8. Descending ramus of the pubis.

From k to p. *Fig.* 6, 8. Horizontal ramus or body of the pubis.

a. *Fig.* 6, 7. External iliac fossa.

b. *Fig.* 6, 7, 8. Anterior and superior spine of the ilium.

c. *Fig.* 6, 7, 8. Posterior and superior spine of the ilium.

e. *Fig.* 6, 7, 8. Posterior and inferior spine of the ilium.

f. *Fig.* 7, 8. Sciatic spine.

g, h. *Fig.* 6, 7, 8. Sciatic tuberosity.

j. *Fig.* 6, 8. Point of union of the ascending ramus of the ischium and descending ramus of the pubis.

k. *Fig.* 6, 8. Angle of the pubis.

l. *Fig.* 6, 8. Spine of the pubis.

m. *Fig.* 6, 8. Pubic articular surface.

n. *Fig.* 6, 8. Thyroid or obturator foramen.

o. *Fig.* 6, 7. Acetabulum.

p. *Fig.* 6, 8. Ilio-pectineal eminence.

q. *Fig.* 8. Brim of the pelvis, or prominent ridge which bounds the internal iliac fossa inferiorly and concurs in forming the abdominal inlet (brim) of the pelvis.

r. *Fig.* 8. Internal iliac fossa.

s. *Fig.* 8. Articular surface of the ilium, which, with the sacrum, forms the sacro-iliac symphysis or synchondrosis.

t. *Fig.* 8. Obturator notch for the transmission of the obturator vessels and nerves.

PLATE II.

DIFFERENCES IN THE PELVIS ACCORDING TO SEX AND AGE.

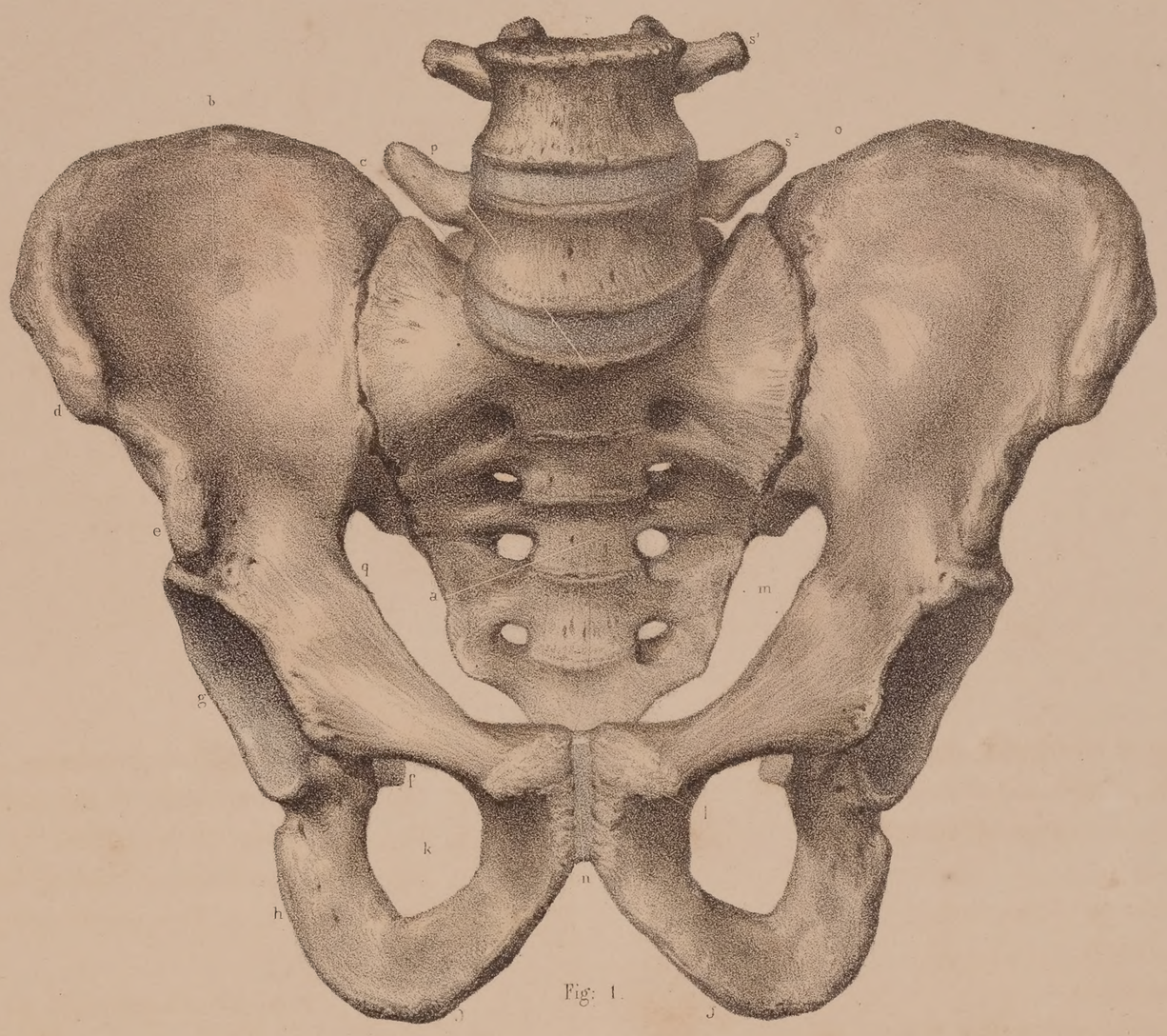
(HALF SIZE.)

Figure 1.—Pelvis of an adult male.
Figure 2.—Pelvis of an adult female.
Figure 3.—Pelvis of a fœtus at the full time.

a. *Fig.* 1, 2. Anterior surface of the sacrum.
b. *Fig.* 1, 2. Internal iliac fossa.
From c to d. *Fig.* 1, 2. Crista ilii.
c. *Fig.* 1, 2. Posterior and superior iliac spine.
d. *Fig.* 1, 2. Anterior and superior iliac spine.
e. *Fig.* 1, 2. Anterior and inferior iliac spine.
f. *Fig.* 1, 2. Sciatic spine.
g. *Fig.* 1, 2. Acetabulum.
h. *Fig.* 1, 2. Tuberosity of the ischium.
From j to j. *Fig.* 1, 2. Arch of the pubis.
k. *Fig.* 1, 2. Obturator hole or foramen.
l. *Fig.* 1, 2. Spine of the pubis.
m. *Fig.* 1, 2. Ilio-pectineal eminence.
n. *Fig.* 1, 2. Pubic symphysis.
o. *Fig.* 1, 2. Sacro-iliac symphysis.
p. *Fig.* 1, 2. Promontory of the sacrum.
q. *Fig.* 1, 2. Brim of the pelvis.
r. *Fig.* 1, 2. The two last lumbar vertebra.
From s^1 to s^2. *Fig.* 1, 2. Transverse processes of these vertebræ.

FIGURE 3.—PELVIS OF THE FŒTUS.

From a^1 to a^4. Ossific points of the sacrum.
b. Osseous points of the lateral masses.
c. Iliac fossa ossified.
d. Horizontal ramus of the pubis ossified.
e. Bony point forming the ischium.
f. Crest of the ilium, cartilaginous.
g. Acetabulum, cartilaginous.
h. Symphysis pubis, cartilaginous, the descending rami of the pubis and ascending rami of the ischium.
j. The two last lumbar vertebræ.



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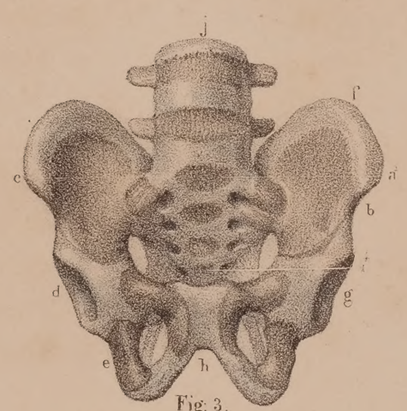

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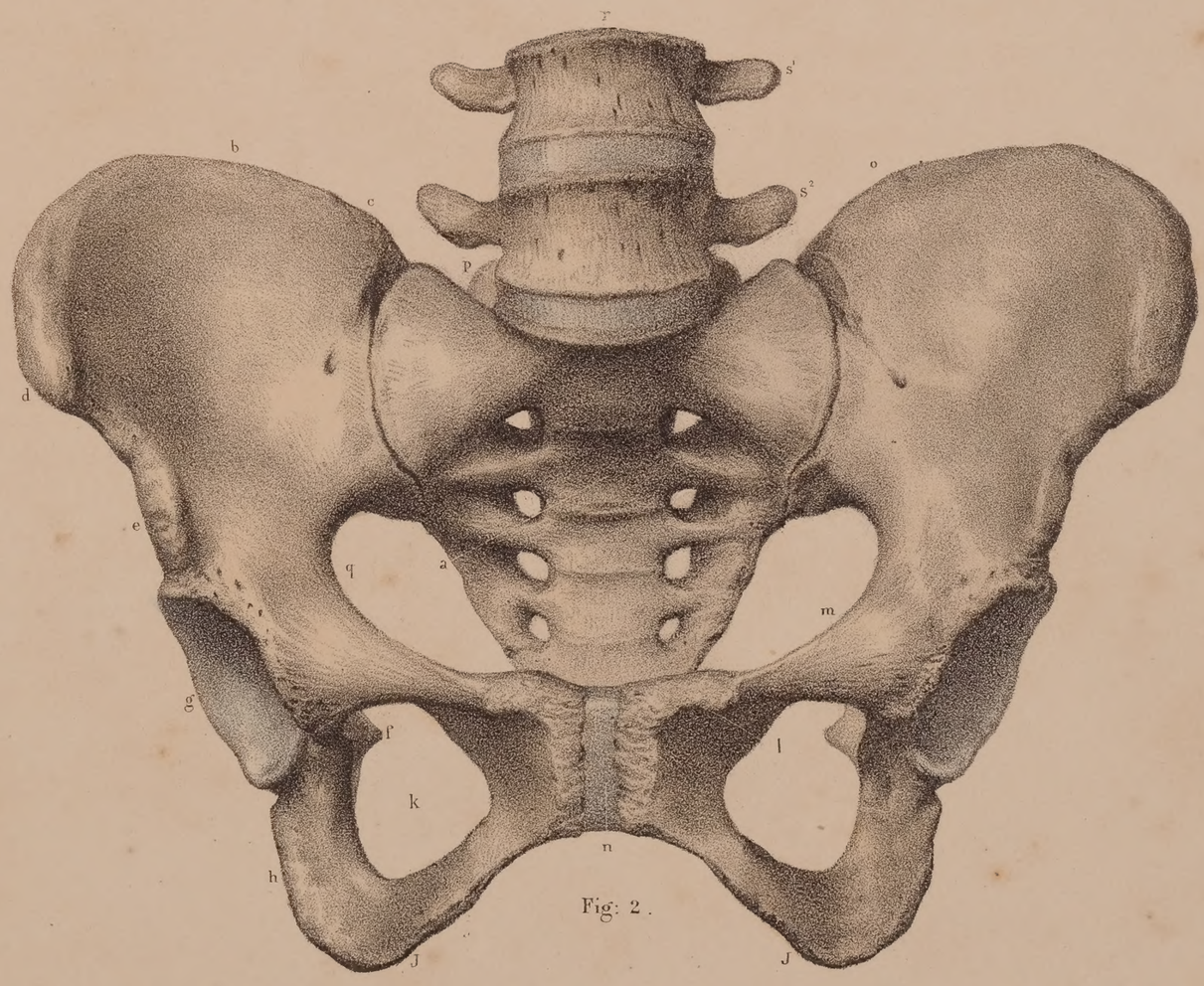

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Fig: 1.

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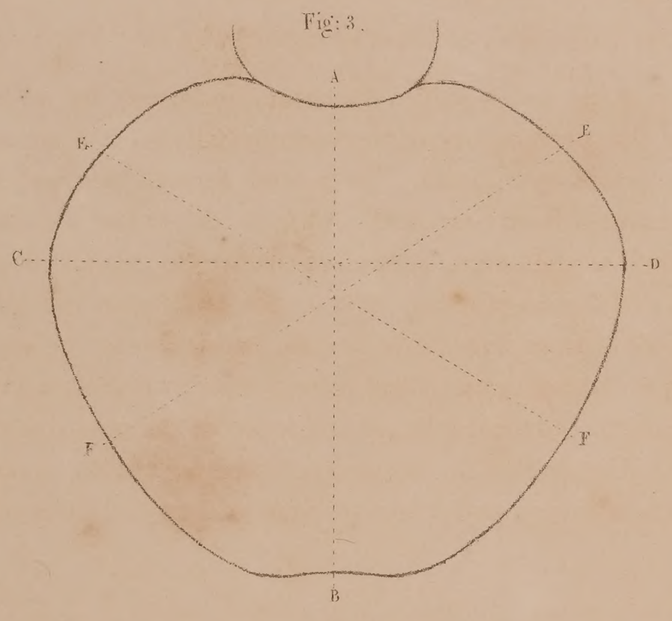

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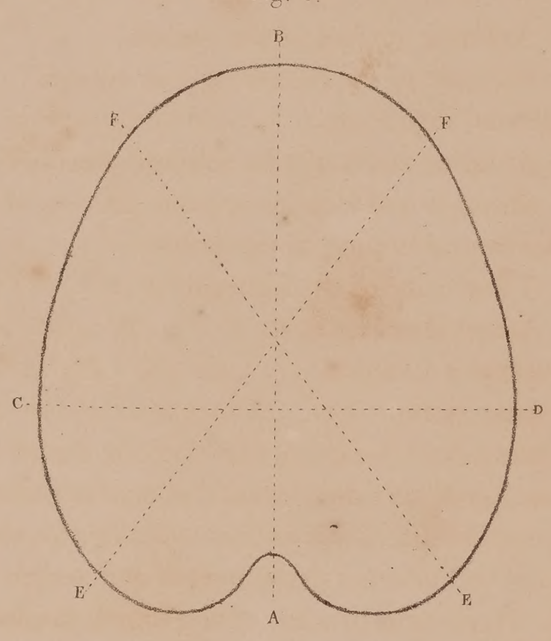

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PLATE III.

VIEW OF THE PELVIS OF AN ADULT FEMALE SEEN FROM ABOVE AND FROM BELOW.

(HALF SIZE.)

Figure 1.— The superior, greater or false pelvis; articulations; brim or superior aperture of the true pelvis.

Figure 2.—Perineal or inferior outlet.

Figure 3.—Circumference of the brim in outline, to exhibit the form and the diameters of this aperture.

Figure 4.—Circumference of the perineal aperture or outlet in outline.

a. *Fig.* 1, 2. Anterior surface of the sacrum.
b. *Fig.* 1, 2. Summit of the os coccygis or coccyx.
c. *Fig.* 1. Internal iliac fossa.
e. *Fig.* 1, 2. Anterior and superior spinous process of the ilium.
f. *Fig.* 1, 2. Anterior and inferior spinous process of the ilium.
g. *Fig.* 1. Horizontal branch of the pubis.
h. *Fig.* 1, 2. Tuberosity of the ischium.
i. *Fig.* 1, 2. Acetabulum.
j. *Fig.* 1. Obturator foramen.
k. *Fig.* 1. Sciatic spine.
o. *Fig.* 1. Great sciatic foramen, transmitting the pyramidalis muscle, the sciatic nerve and the gluteal and sciatic vessels and nerves.
p. *Fig.* 1. Lesser sciatic foramen transmitting the obturator internus muscle and the internal pudic nerves and vessels.
m. *Fig.* 1, 2. Transverse process of the fourth lumbar vertebra.
n. *Fig.* 1, 2. Articular process of the fourth lumbar vertebra.
l. *Fig.* 1, 2. The two last lumbar vertebræ.
q. *Fig.* 1. The sacro-vertebral fibro-cartilage and projecting angle or promontory of the sacrum.

1. *Fig.* 1, 2. Pubic fibro-cartilage and symphysis.
2. *Fig.* 1. Sacro-iliac symphysis; anterior and superior ligament of the same symphysis.
3. *Fig.* 1. Sacro-coccygeal symphysis.
4. *Fig.* 2. Inferior or triangular ligament of the pubic symphysis.
5. *Fig.* 1. Slip of the anterior sacro-iliac ligament which ascends to the transverse process of the fifth lumbar vertebra.
6. *Fig.* 1. Ilio-lumbar ligament.
7. *Fig.* 2. Vertical sacro-iliac ligament.
8. *Fig.* 1. Fibro-cartilage which connects the fourth and fifth lumbar vertebræ.
9. *Fig.* 1, 2. Great sacro-sciatic ligament.
10. *Fig.* 1, 2. Small sacro-sciatic ligament.

FIGURE 3.—OUTLINE FIGURE OF THE BRIM OR ABDOMINAL APERTURE OF THE PELVIS.

(The diameters are indicated by dotted lines.)

a, b. Antero-posterior or sacro-pubic diameter, indicated by a line, which from the promontory of the sacrum falls on the superior part of the pubic symphysis. In a well formed woman, this diameter measures from four inches to four inches and a quarter.

c, d. Transverse or iliac diameter, measured from the posterior part of the paries of the acetabulum of one side to that of the other. This diameter is from five in. to five in. and a quarter in length.

e, f. The two oblique diameters measured from the sacro-iliac symphysis of the one side to the ilio-pectineal eminence of the opposite side. The oblique diameters, in normally formed females, measure from about four inches and a half to four inches and three quarters each.

FIGURE 4.—CONTOUR OF THE PERINEAL APERTURE OR OUTLET OF THE PELVIS.

a, b. Antero-posterior diameter extending from the point of the os coccygis to the inferior part of the symphysis pubis. It measures about four inches, but when the coccyx is pressed back, as it is in labour, the diameter may reach five inches or more in extent.

c, d. Transverse diameter between the internal and posterior part of the one tuberosity of the ischium, and that of the other. It measures about four inches or a little more.

e, f. Oblique diameter extending from the middle of the great sciatic ligament of the one side to the point of junction of the ascending rami of the ischium, and descending rami of the pubis of the opposite side. This diameter is also about or upwards of four in.

PLATE IV.

SECTIONS OF THE PELVIS TO ILLUSTRATE THE DIFFERENT PARTS OF THE PELVIC EXCAVATION AND TO SHOW THE FORM, THE DIRECTION AND THE EXTENT OF THESE.

(HALF SIZE.)

Figures 1 and 2 are from a section of the pelvis in the transverse or inter-iliac diameter; Figures 3 and 4 are from a vertical section of the pelvis in the sacro-pubic diameter; Figure 5 represents the lesser or true pelvis in the line of the section indicated by Professor Chaussier.

Figure 1.—Posterior half of the pelvis of an adult female.
Figure 2.—Anterior half of the same pelvis.
Figure 3.—Right lateral half of the pelvis of an adult female.
Figure 4.—Left lateral half of the same pelvis in outline.
Figure 5.—Section of the pelvis of an adult female in the plane of the superior aperture or brim.

a. *Fig.* 1, 2, 3. Anterior surface of the sacrum and os coccygis.
b. *Fig* 1, 3, 5. Summit of the os coccygis.
c. *Fig.* 1, 2, 3. Crest of the os ilium.
d. *Fig.* 1, 2, 3, 5. Tuberosity of the os ischium.
e. *Fig.* 1, 2. Section by the posterior margin of the acetabulum.
c c, d d. *Fig.* 1, 2. Vertical section of the pelvis passing through the crests of the ilia, the posterior edges of the acetabula, and the tuberosities of the ischia.
b, f. *Fig.* 3. Vertical section of the sacrum, coccyx and two last lumbar vertebræ in the mesial line.

From c to c^1. *Fig.* 1, 2. Extent of the greater or false pelvis from one crista ilii to the other; the extreme length of the line between these two points is generally upwards of eleven inches, ($11\frac{1}{4}$ in.)
From c^2 to c^3. *Fig.* 2. Distance of the one anterior and superior iliac spine to the other, upwards of ten inches.
From d to d^1. *Fig.* 1, 2. Distance of one tuber ischii to the other about four inches and a quarter.
From d^2 to d^3. *Fig.* 2. Transverse or inter-iliac diameter, upwards of five inches and a quarter.

f. *Fig.* 1, 3. The two last lumbar vertebræ.
g. *Fig.* 1. The sciatic spine.
h. *Fig.* 1, 3, 5. Great sciatic notch, converted into a hole by the small sacro-sciatic ligament.
i. *Fig.* 1, 3. Small sciatic notch converted into a hole by the sacro-sciatic ligaments.
j. *Fig.* 5. Obturator foramen.
k, k, k. *Fig.* 5. Section of the pelvis in the boundary line of the inferior aperture or outlet.
l. *Fig.* 3. Sacral canal.
m. *Fig.* 2. Obturator notch converted into a hole by the obturator ligament.

1. *Fig.* 1. Ilio-lumbar ligament.
2. *Fig.* 1. The different fasciculi of the anterior and superior sacro-iliac ligament.
3. *Fig.* 1, 3, 5. The small sacro-sciatic ligament.
4. *Fig.* 1, 3, 5. The great sacro-sciatic ligament.
5. *Fig.* 1. The anterior sacro-coccygeal ligament.
6. *Fig.* 3. Sacro-iliac symphysis.
7. *Fig.* 1, 3. Fibro-cartilage uniting the sacrum and fifth lumbar vertebra.
8. *Fig.* 1, 3. Fibro-cartilaginous disc of the two last lumbar vertebræ.
9. *Fig.* 2, 3. Inter-pubic fibro-cartilage.
10. *Fig.* 2. Inferior pubic ligament.
11. *Fig.* 2, 3. Obturator ligament.
12. *Fig.* 3. Posterior inclined plane.
13. *Fig.* 3. Anterior inclined plane.

FIGURE 4.—LEFT LATERAL HALF OF THE PELVIS IN OUTLINE.

(The dotted lines indicate the diameters of the pelvis, the thickness and the length of the bones.)

a, b. Sacro-pubic diameter from four inches to four inches and a quarter.
c, d. Cocci-pubic diameter about four inches and a quarter.
e, f. Antero-posterior diameter of the hollow of the pelvis, about five inches measured from the most concave part of the sacrum to the middle of the posterior surface of the symphysis pubis.
g, h. Depth of the pubis, one inch and a half or rather more.
i, j. Thickness of the symphysis pubis, rather more than half an inch.
k, l. Thickness of the base of the sacrum, a little more than two inches and a half.
m, n. Depth of the whole pelvis, about seven inches and a half, measured from the middle of the crista ilii to the point of the tuber ischii.
o, p. Depth of the sacrum about four inches.
q, r. Length of the coccyx about one inch or a little more.
s, t. From the symphysis pubis to the summit of the first spinous process of the sacrum about seven inches and a half.

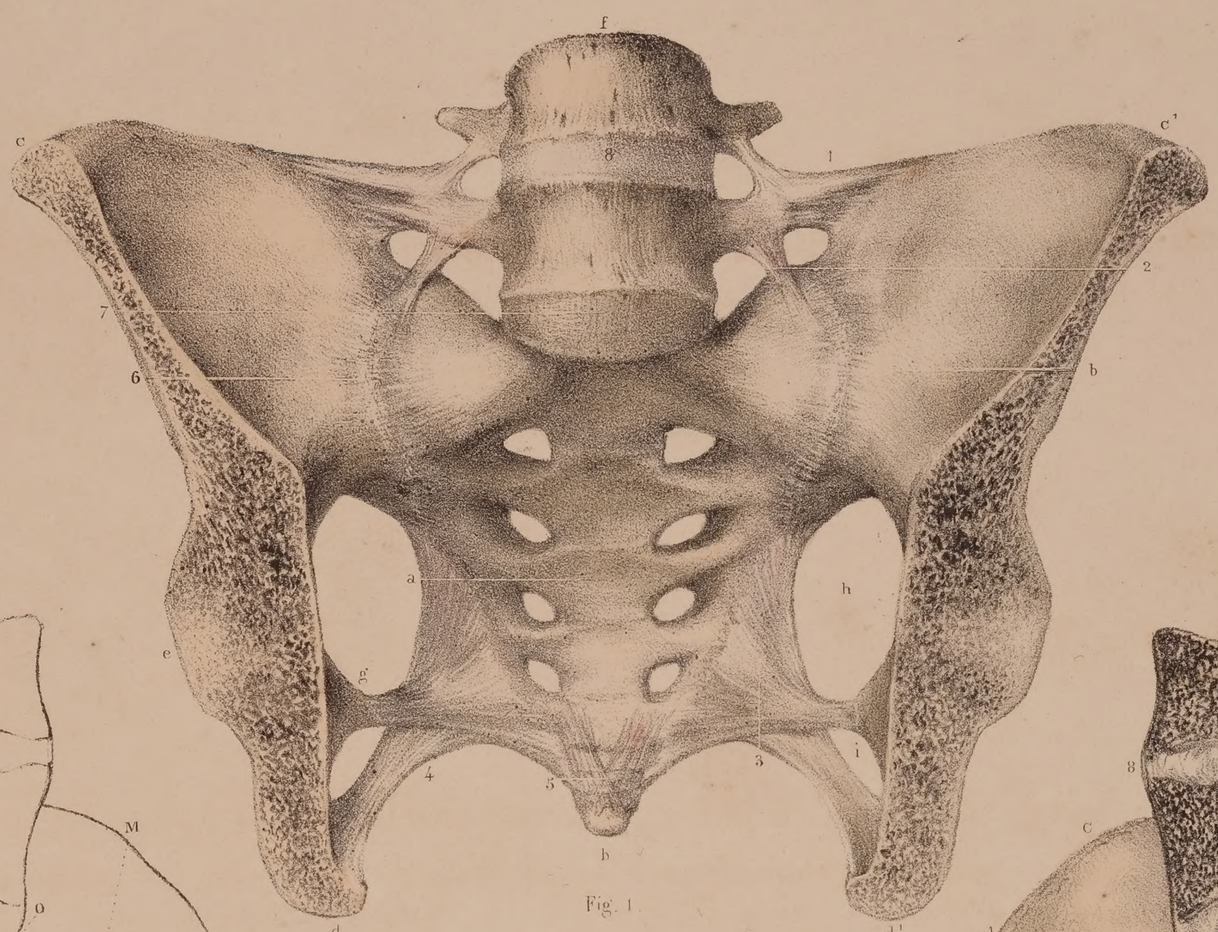
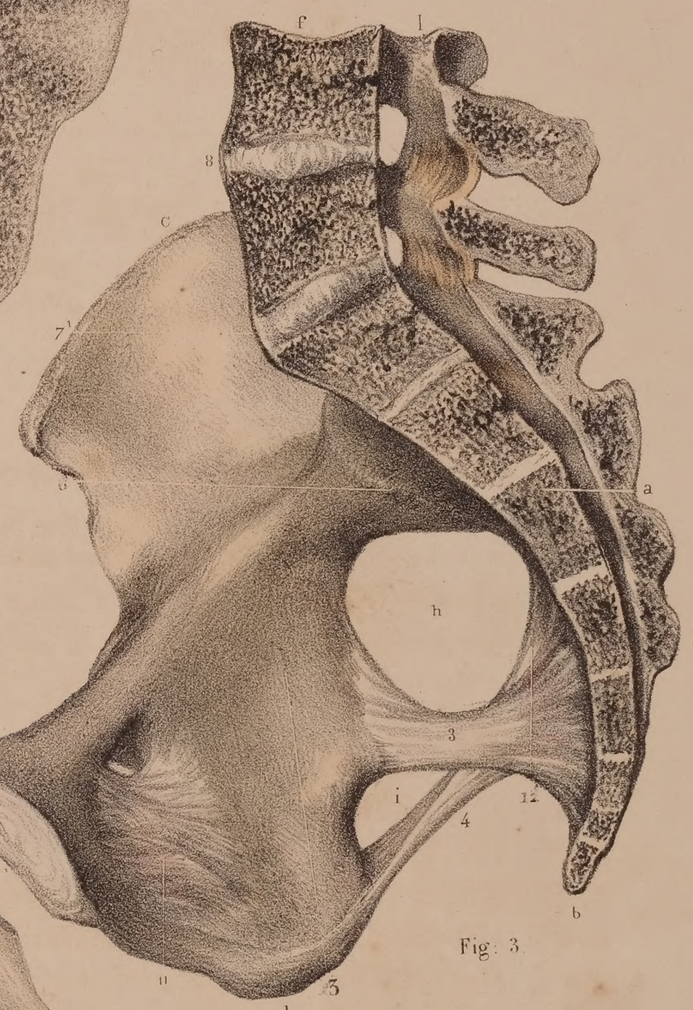


Fig. 1

Fig. 4



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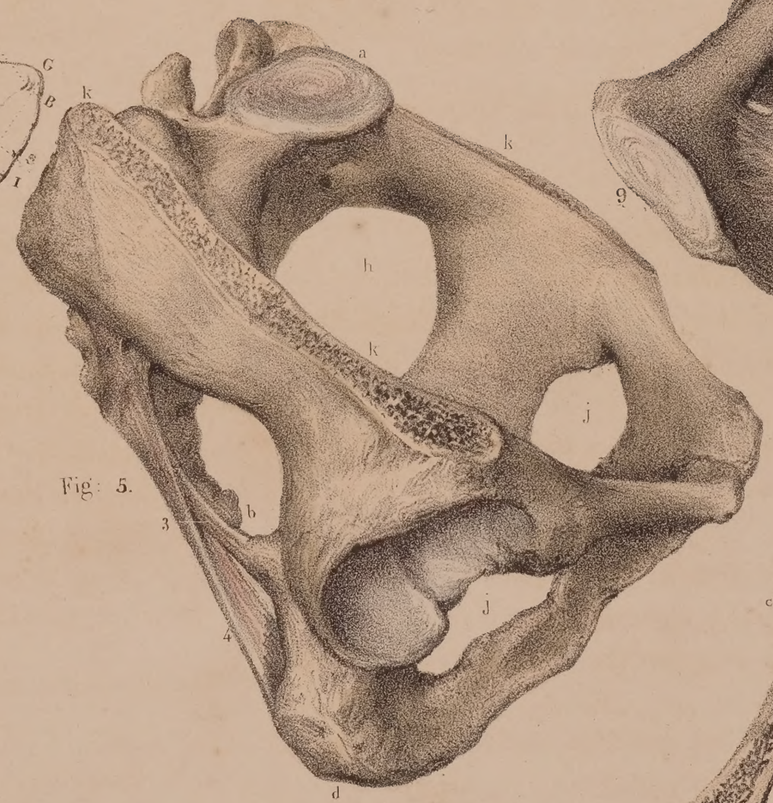

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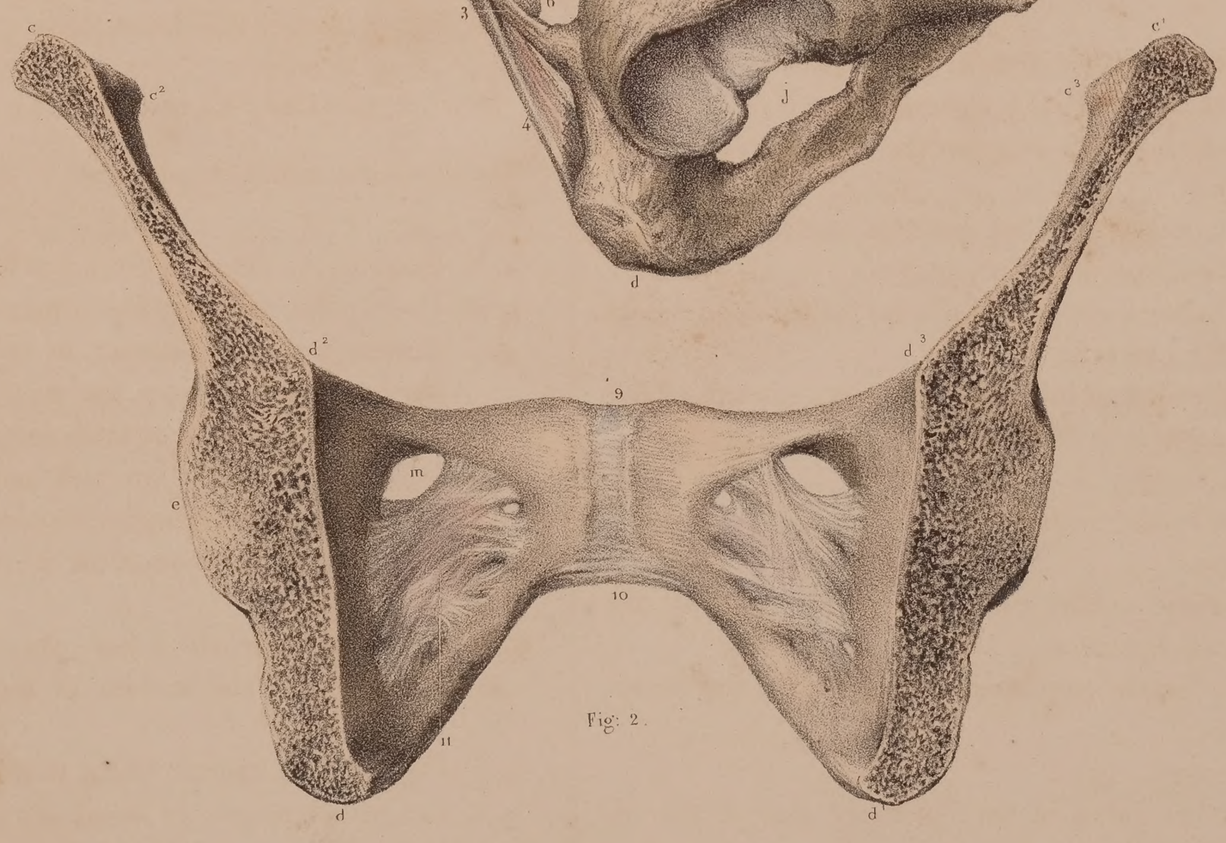

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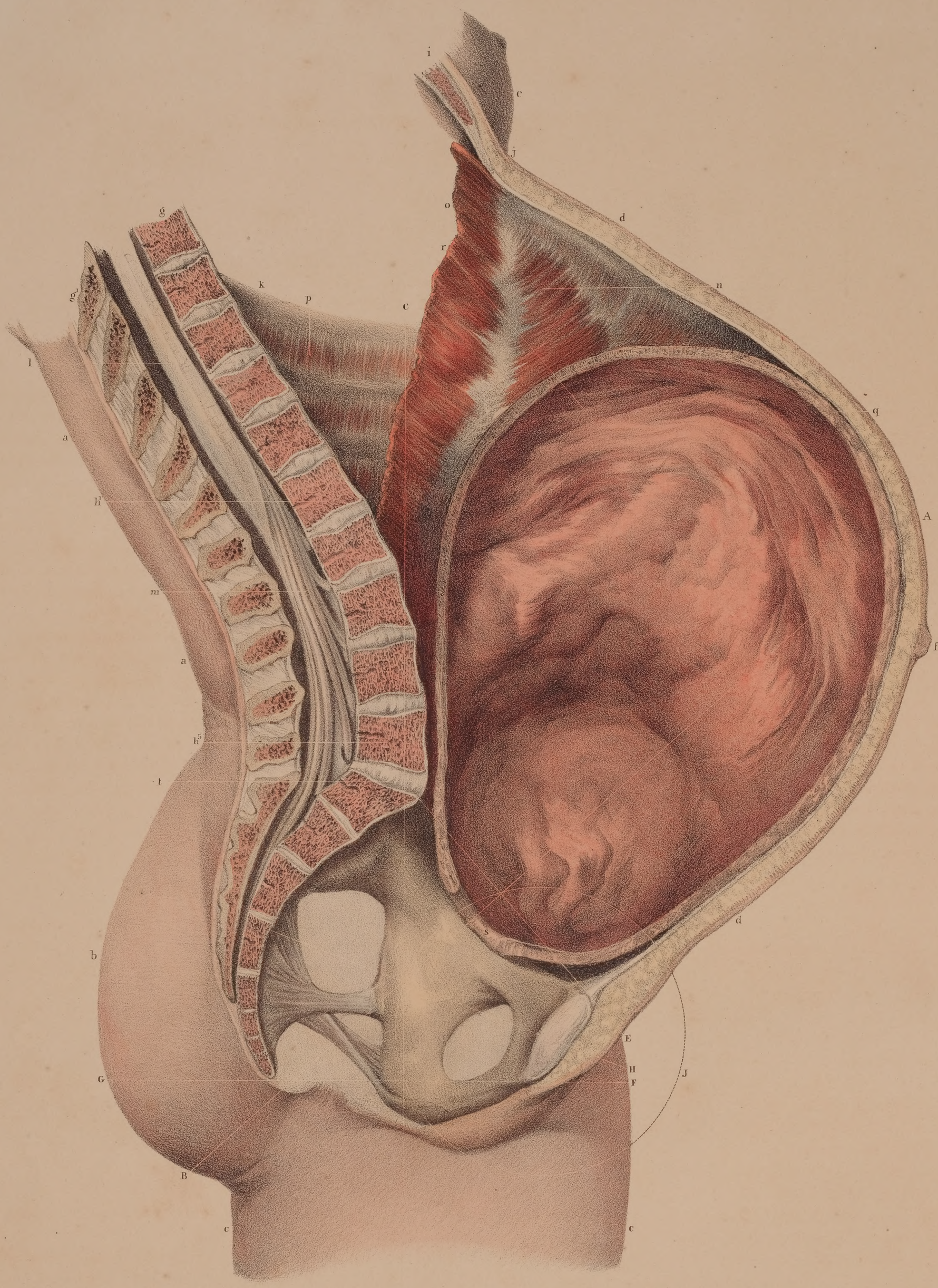

Dessiné d'après nature, par Emile Beau

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PLATE V.

DIRECTION AND AXES OF THE PELVIS.

HALF SIZE.

a, a. Left half of the lumbar region of the body.
b. Left gluteal region.
c, c. Superior and internal surface of the left thigh.
d, d. Section of the anterior abdominal parietes in the linea alba.
e. Left anterior thoracic region.
f. Umbilicus.
g. Section of the bodies of the five last dorsal vertebræ.
g^1. Spinous processes of the last mentioned vertebræ.
From h^1 to h^5. Section of the five lumbar vertebræ.
i. Inferior portion of the sternum divided in the mesial line.
j. Ensiform cartilage.
k. Eighth rib.
l. Inferior extremity of the spinal marrow.
m. Termination of the spinal marrow, commonly known by the name of the *cauda equina*.
n. Transversalis abdominis muscle.
o. Section of the diaphragm.
p. Left internal intercostal muscles.
q. Section of the uterus in the median line.
r. Left internal surface of the uterus.
s. Left half of the orifice of the uterus.
t. Promontory of the sacrum.

A, B. Axis of the brim or superior aperture of the pelvis, forming an angle of 49° with the axis of the body: the imaginary line which represents this axis should pass from about two inches above the umbilicus to within two lines in front of the os coccygis; it is formed by raising a perpendicular line on the centre of the plane of the brim.
C, D. Axis of the outlet of the pelvis, parallel to the axis of the body.
E. Plane of the brim or superior aperture of the pelvis.
G, F. Plane of the outlet; this plane is parallel to that of the horizon, and the line representing it passes directly under the arch of the pubis, and by the point of the os coccygis.
H. Antero-posterior diameter of the cavity of the pelvis.
J. Circle of Carus, described around the symphysis pubis, having for its centre, the middle of the symphysis itself, at the point of its intersection by the antero-posterior diameter of the pelvic cavity, and the half of this diameter for a radius. The points of intersection of the circle with the diameters of the pelvic outlets and cavity, meet in the middle of these diameters. That portion of the circle which is contained within the pelvis, indicates the course of the fœtus, when it is passing through the pelvic cavity.

PLATE VI.

MALFORMATIONS OF THE PELVIS.

(HALF SIZE.)

The two pelves represented in this Plate, are pretty regular in regard to general configuration; they are only malformed in consequence in the one of an excess, in the other of a deficiency of the normal dimensions.

Figure 1.—Malformation of the pelvis in consequence of an excess of capacity, the pelvis seen from above.

Figure 2.—Malformation of the pelvis in consequence of a want of capacity, seen from its superior aspect.

Figure 3.—Outline of the circumference of the brim of *figure* 1.

A, B. Antero-posterior diameter, upwards of four in. and three quarters.
C, D. Transverse diameter, upwards of six inches.
E, F. Oblique diameters, nearly five inches and a half.

Figure 4.—Outline of the circumference of the outlet of *figure* 1.

A, B. Antero-posterior diameter upwards of five inches and a quarter.
C, D. Transverse diameter, about five inches.
E, F. Oblique diameters, upwards of five inches and a quarter.

Figure 5.—Outline of the circumference of the brim of *figure* 2.

A, B. Antero-posterior diameter, a little more than three inches.
C, D. Transverse diameter, four inches and a quarter.
E, F. Oblique diameters, three inches eleven lines.

Figure 6.—Outline of the circumference of the outlet of *figure* 2.

A, B. Antero-posterior diameter, about three inches.
C, D. Transverse diameter, about four inches.
E, F. Oblique diameters, about four inches.

Remarks.—A pelvis whose dimensions are above the standard, is often attended with inconveniences, which, though far less serious than the evils that accompany a contracted one, are not without practical interest. When the cavity of the pelvis is too large, those displacements to which the uterus is liable more readily occur, and when they happen, they are also more difficult of remedy. Such a pelvis fails to support the gravid uterus adequately, and allows it to exert an undue pressure on the other contents of the pelvis, giving rise to tenesmus, or constipation, frequent micturition or retention of urine, hæmorrhoids, varix of the veins of the legs, &c. At the period of labour, also, the absence of the wonted and salutary resistance, leads to the head being rapidly forced through the cavity of the pelvis, and all the inconveniences of sudden and unexpected birth, the perineum itself being occasionally torn during the abrupt and forcible descent of the child. The pelvis here figured is an excellent example, its various diameters being enlarged from eight lines to one inch beyond the normal proportions. It should be carefully studied along with Pl. III.

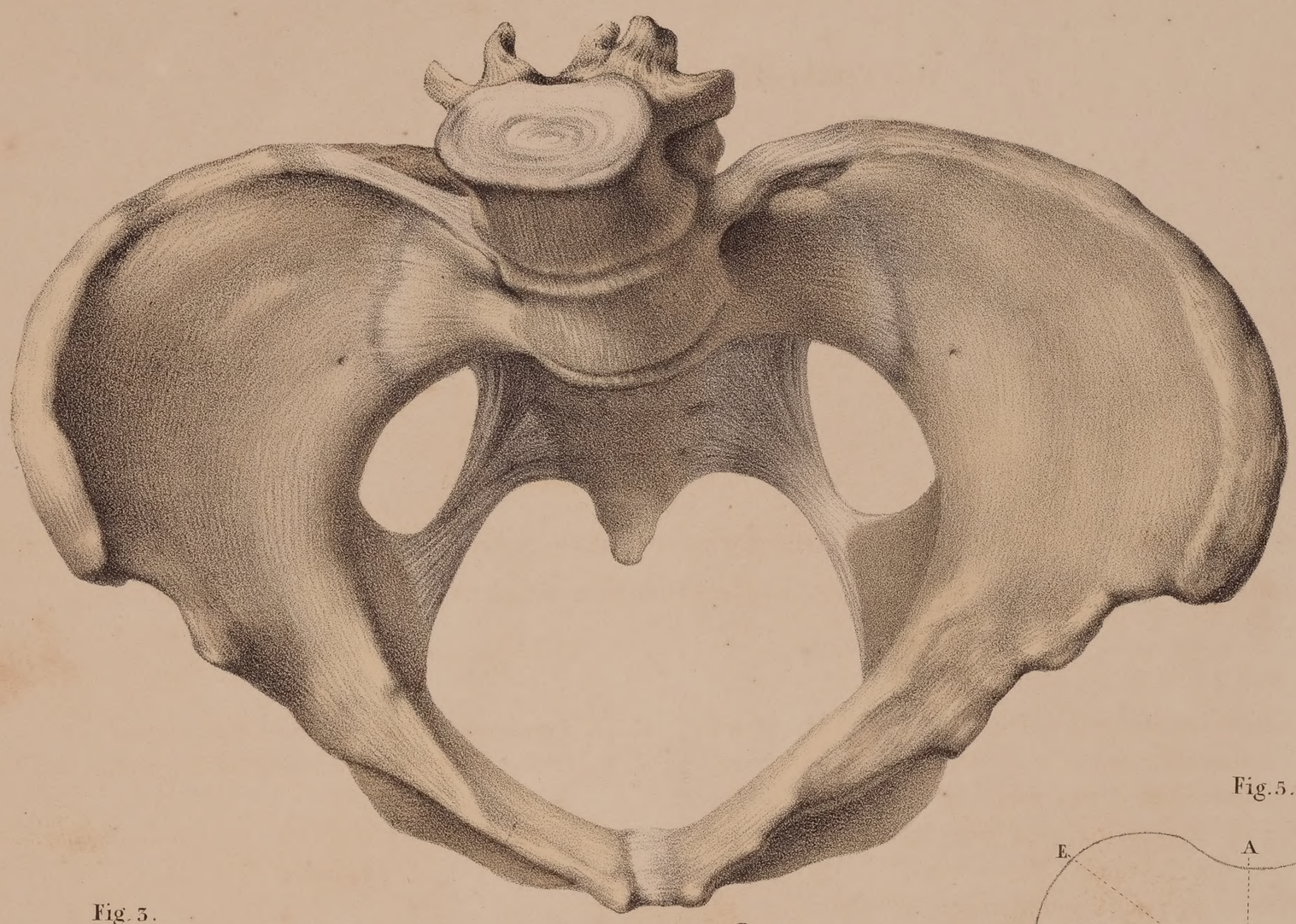
Fig. 2. The researches of Naegele prove that there are two kinds of pelves, whose dimensions are below the standard: 1st. Where the individual bones do not depart in their physical characters, size alone excepted, from the healthy state, and where the respective diameters of the pelvis and the form of the pubic arch, are in relative proportion to the pelvis of the adult female.

2ndly. Where the pelvis has been arrested at an early stage of its development and still preserves the relative dimensions of infancy, where the pubic arch remains at an acute angle, and the three portions of the ossa innominata continue to be united by cartilage.

Pelves of the first class are met with indifferently in persons of low, middling, and tall, stature; they are more frequent than is usually imagined, and are commonly associated with a perfect development of the uterine organs. They, however, remain unsuspected till pregnancy occurs; in fact, they are often only revealed by the obstacles they oppose to the natural termination of labour, these being commonly of such a kind as to require the intervention of art. Like those pelves which are healthy, but of excessive size, diminutive ones are to be regarded as lusus naturæ. We frequently observe the head disproportionably large or small; and the pelvis it would appear, presents itself with the same inharmonious dimensions.

Pelves of the second class are commonly found in dwarfs, and being usually accompanied with a defective development of the internal genital organs, they are of little interest to the accoucheur.—J. S. S.

Fig. 1.



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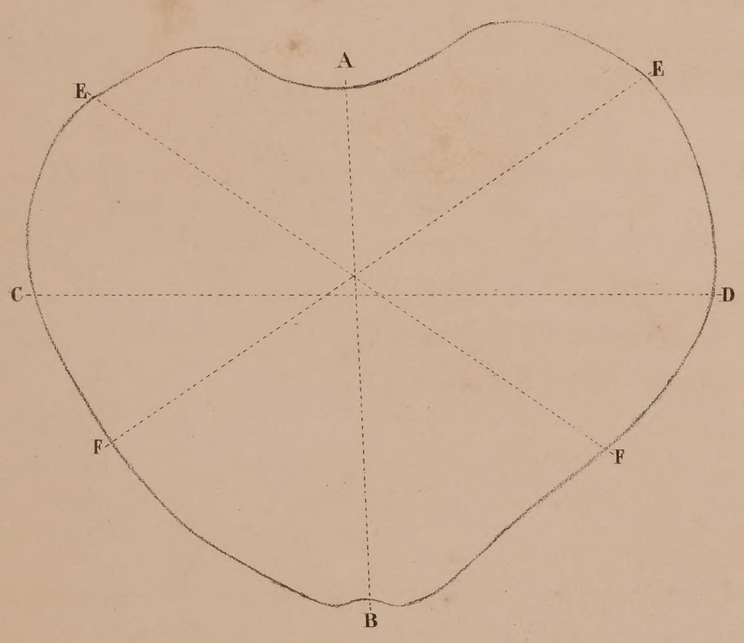

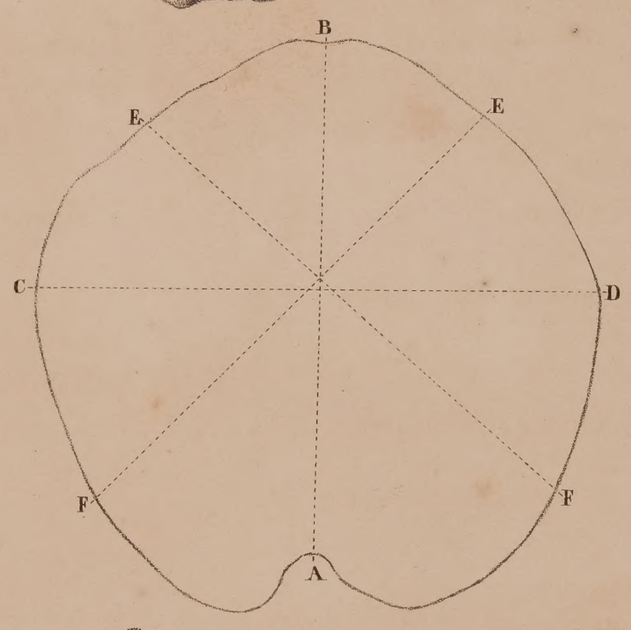

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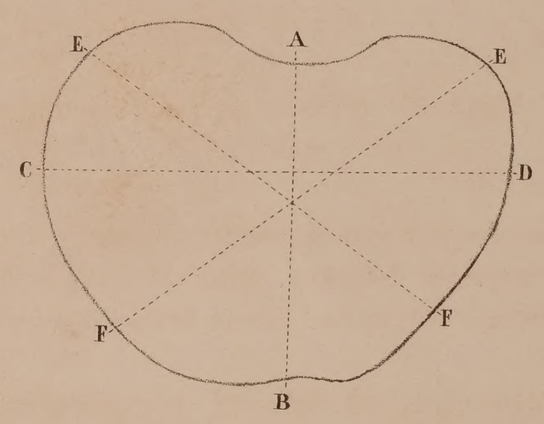

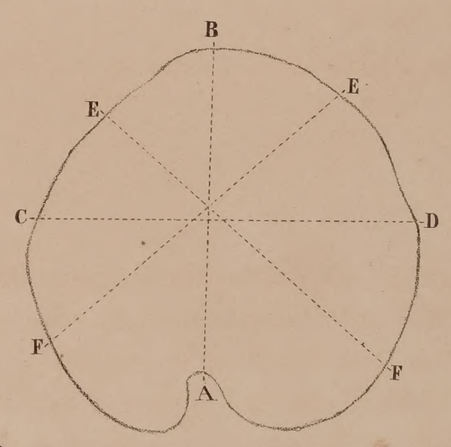

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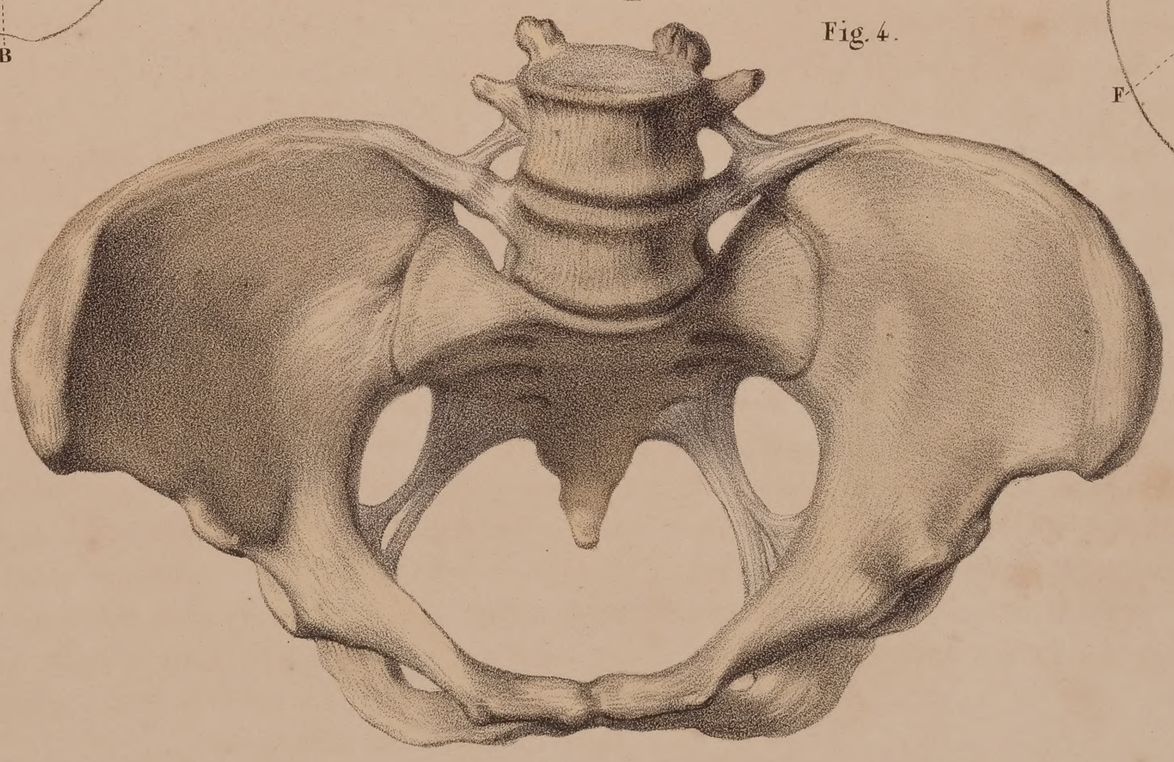

Fig. 2.

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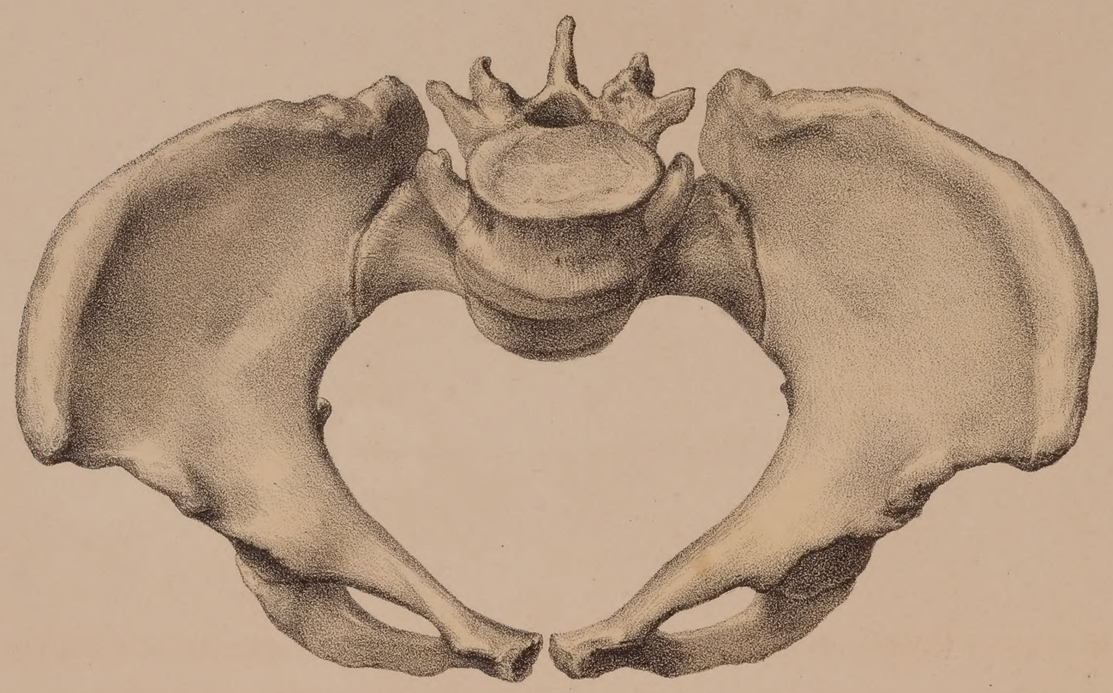
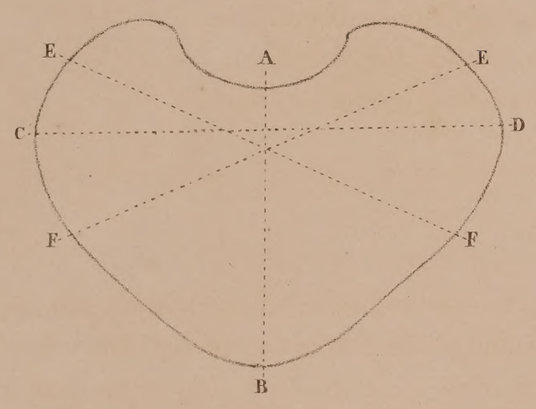
Fig. 1.





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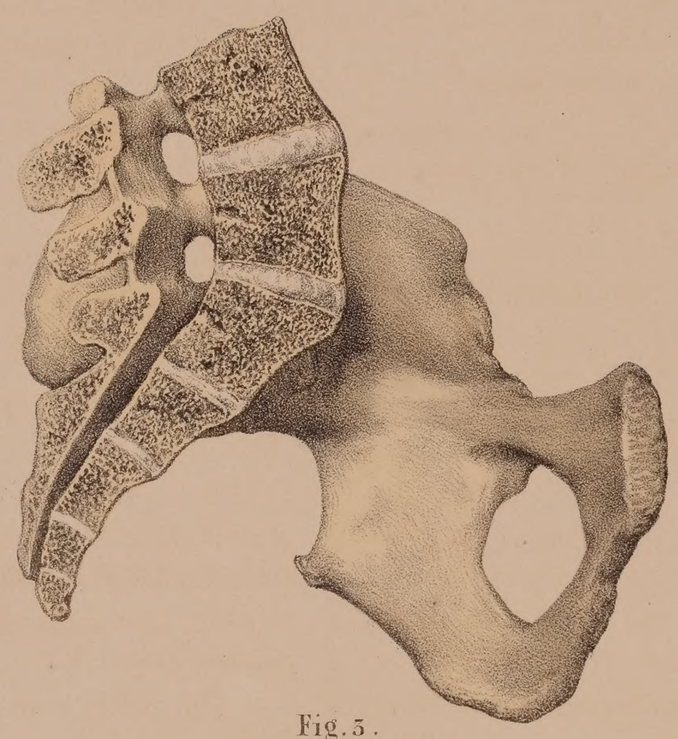

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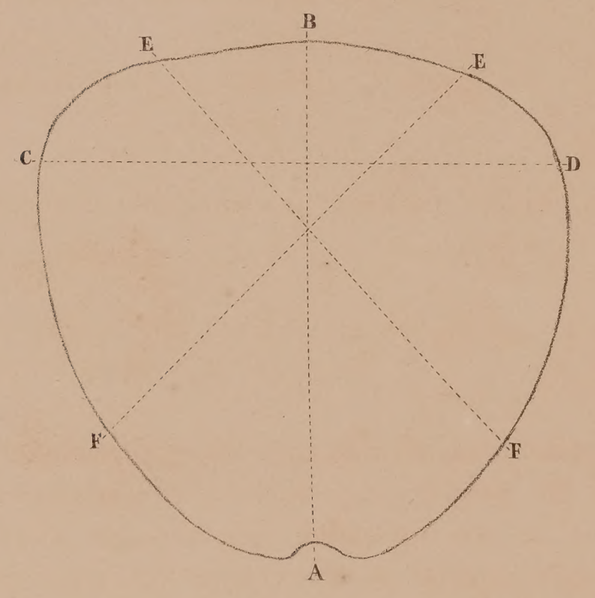

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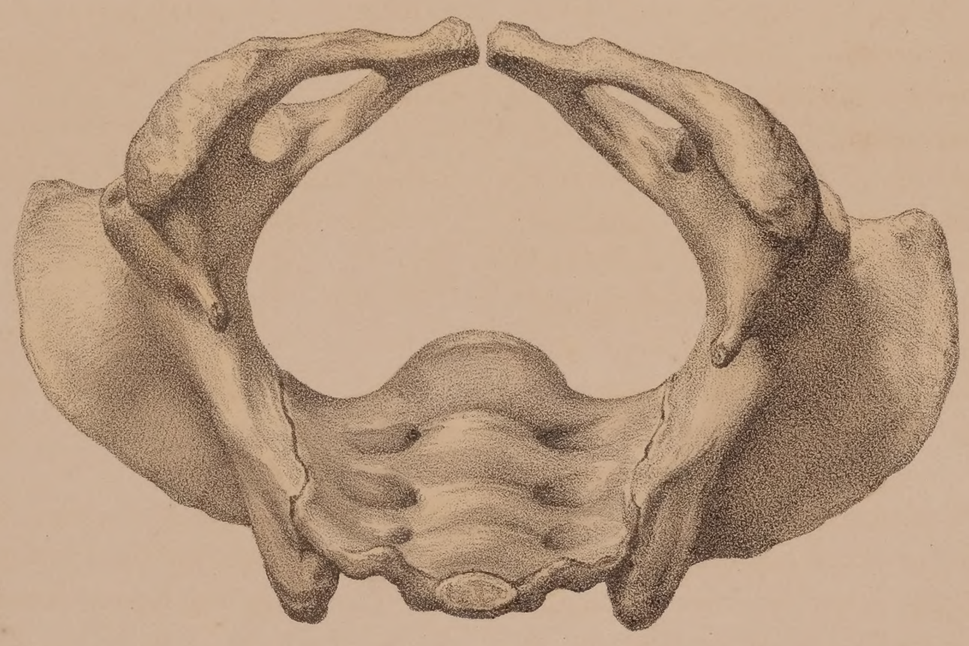


Fig. 2.

Dessiné d'après nature, par Emile Beau.

Publié par Germer Baillière, à Paris.

Imp: Lith: de Fourquemin, r: du Four S.t G.n 17.

PLATE VII.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

The pelvis represented in the several figures of this plate, besides the really small size of its brim is flattened, as if it had been compressed by two forces, the one acting downwards and forwards, the other upwards and backwards.

Figure 1.—The pelvis seen from above.
Figure 2.—The same pelvis seen from below.
Figure 3.—Section of the pelvis in the mesial plane.

Figure 4.—Outline of the circumference of the brim of figure 1.

A, B. Antero-posterior or sacro-pubic diameter, two inches and a half in length.
C, D. Transverse or inter-iliac diameter, above four inches and a quarter.
E, F. Oblique diameters, four inches.

Figure 5.—Circumference of the perineal outlet in *figure* 3, in outline.

A, B. Cocci-pubic diameter, four inches eleven lines.
C, D. Inter-ischial diameter, five inches five lines.
E, F. Oblique diameters, each four inches ten lines.

General Remarks.—Every alteration in the shape or deviation from the natural proportions of the apertures and cavity of the true pelvis, as the unyielding ring through which the child must pass, demands especial attention from the accoucheur. These alterations may result from original formation, from incomplete or unequal development, or from disease of the osseous structure, (rickets, mollities ossium, exostosis, fractures). Most commonly they will be found to originate from the pelvic arches having been incapable, at some period of life, of sustaining and transmitting the superincumbent weight of the trunk to the heads of the thigh bones. When the superior arch yields under the superincumbent weight, it becomes flattened generally, Pl. VII, Fig. 1, or the sacrum is projected inwards, Pl. XV, Fig. 1. In both instances, the sacro-pubic diameter is lessened. When the inferior arch gives way, the acetabula are forced upwards and inwards, Pl. VIII and X, Fig. 1, so as to lessen the transverse diameters. Where a softened or inadequate bony tissue has existed in childhood, or the bones have been attacked by mollities ossium in after life, both arches usually yield, and the sacrum and acetabula are simultaneously driven inwards so as greatly to distort and lessen the bony cincture of the pelvis, Pl. X. The pressure of the powerful muscles which give form to the haunches, must also exert some influence over the sides of the pelvis by pressing them inwards. The sitting and lying positions will likewise alter the directions of the bones and especially affect the parts which form the boundaries of the lower aperture or outlet Pl. XII, Fig. 1. Where the softening is partial, the deformity will be partial likewise.

These encroachments on the normal dimensions of the lesser pelvis, occasion all the grades of difficult labour, from a simple prolongation of a few hours, during which the yielding head of the child is compressed and gradually moulded to the altered shape of the pelvis, up to a protraction extending to days, the effect of which, to the mother, is fatal exhaustion from ineffectual labour throes, the supervention of fever or of inflammation, or the rupture of the uterus and laceration of the vagina. To prevent these fatal occurrences, the graver operations of the obstetric art,—the induction of premature labour, the extraction of the child by means of the forceps or lever, embryulcy, and in some rare cases the Cæsarian section,—are the resources to be employed.

This pelvis is one in which the diameter of the upper outlet is too much reduced to permit the passage of a fœtus at the full term, and yet not so much so, as to prohibit the passage of a fœtus at an early, but still "viable" age. If the sacro-pubic diameter be less than two and a half inches (English) a viable child will not pass. The following is Ritgen's table of the period of pregnancy, at which labour should be induced, according to the degree of narrowing of the sacro-pubic diameter.

Labour should be induced at the 29th week, when the antero-posterior	diameter	of	the	pelvis	is.	2	inches	7 lines.
„	„	„	30th	„		2	„	8 „
„	„	„	31st	„		2	„	9 „
„	„	„	35th	„		2	„	10 „
„	„	„	36th	„		2	„	11 „
„	„	„	37th	„		3	„	0 „

When the sacro-pubic diameter is above three inches, we may hope that a child at the full term will pass.

The pelvis here figured is remarkable for the large size of its outlet; for the small size of its brim. The deformity is especially referable to the superior and back part of the bony cincture. It would appear as if the rami of the ischium and pubis, and the parts around the acetabula had continued healthy, whilst a process of softening and of interstitial absorption had gone on in the posterior portions of the alæ of the ilia and probably also in the sacrum, the bodies of the bones of which are of insufficient depth, but of disproportionate thickness. Let the sectional view of the pelvis in this plate be compared with the drawing, Fig. 3 of Pl. IV, and the seat and kind of deformity represented will be clearly understood.—J. S. S.

PLATE VIII.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

In the pelvis, from which the figures in this plate are taken, the sacrum at the distance of an inch and an half from its apex, is bent forwards horizontally, and the os coccygis which is implanted upon it, is even turned slightly upwards, by which maldirection of parts, there is a deep excavation produced towards the inferior region of the sacrum. The horizontal rami of the pubis run parallel to one another through a space of more than two inches, and form a deep sulcus behind the pubis nearly half an inch in width. The pubic articular surfaces have to bend inwards anteriorly, that they may meet. Taken as a whole this pelvis appears flattened laterally; the arch of the pubis is extremely narrow; the ischia are approximated and the result is a great predominance of the dimensions in the antero-posterior direction. Unquestionably the heads of the thigh bones pressing into the acetubula with the weight of the body superimposed upon them, proved the immediate efficient cause of the deformity here represented.

Figure 1.—A pelvis generally deformed seen from above or from its base.

Figure 2.—The same pelvis seen from below or from its summit.

Figure 3.—The anterior region of the same pelvis.

Figure 4.—Circumference in outline of the brim, or inlet of *Figure* 1.

A, B. Antero-posterior diameter, four inches and a half.
C, D. Transverse diameter, three inches and three quarters nearly.
E, F. Oblique diameters, three inches ten lines each.

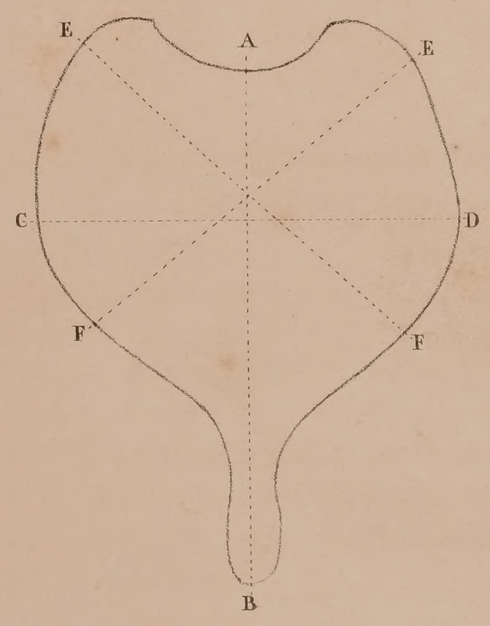
Figure 5.—Circumference in outline of the outlet of *Figure* 2.

A, B. Antero-posterior diameter, three inches eight lines.
C, D. Transverse diameter, two inches six lines.
E, F. Oblique diameters, three inches each.

Remarks.—This is one of the more common kinds of deformity, and is a direct effect of a preternaturally soft state of the bones. The softening here must have been general; the sides of the sacrum are bent in towards the bodies of its component bones, and the sweep of the ilia, which forms the brim, from the sacro-iliac synchondroses outwards, is materially lessened. The weight of the body resting on the heads of the thigh bones in the acetabula, has very obviously caused the deformity. The whole upper part of the pelvis has been forced down upon its lower parts. The tuberosities of the ischia alone have maintained something like their relative position to the acetabula, and strongly connected as they are with the sacrum by means of the sacro-sciatic ligaments, the singular scooping out of the lower portion of the sacrum, and tilting up of the os coccygis, which we remark have been the consequence. The rami of the pubis and ischia as the weakest bones have yielded in the greatest degree.—J. S. S.

Fig. 1.

Fig. 4.



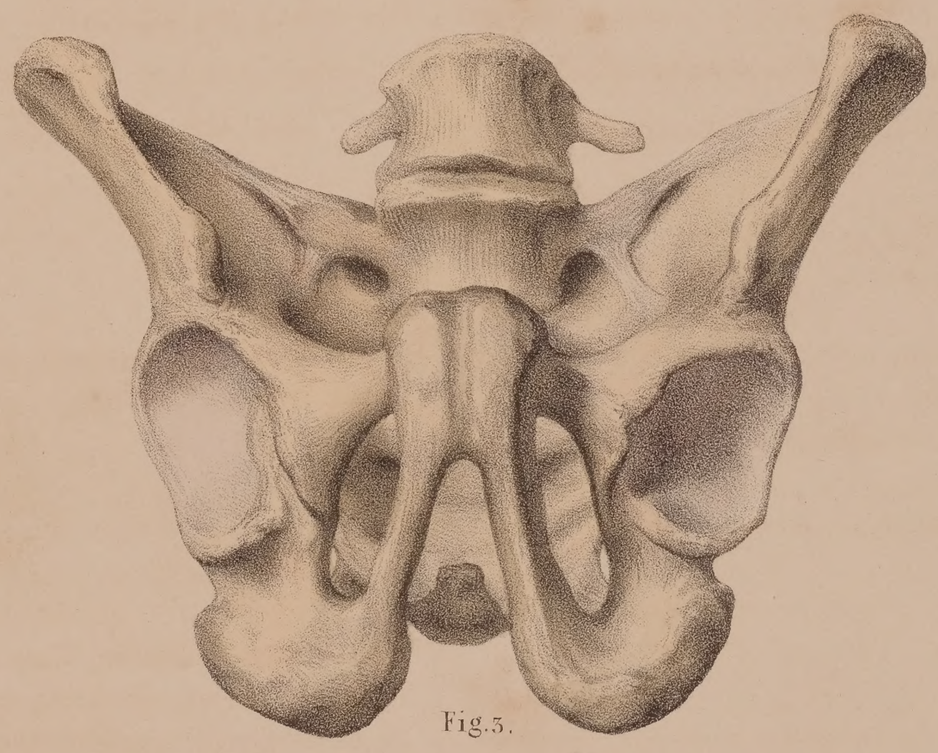


Fig. 3.

Fig. 5.

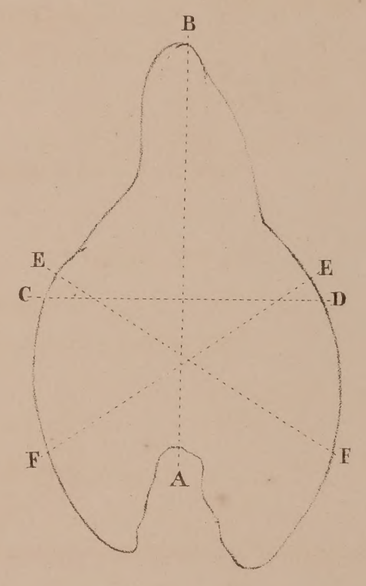


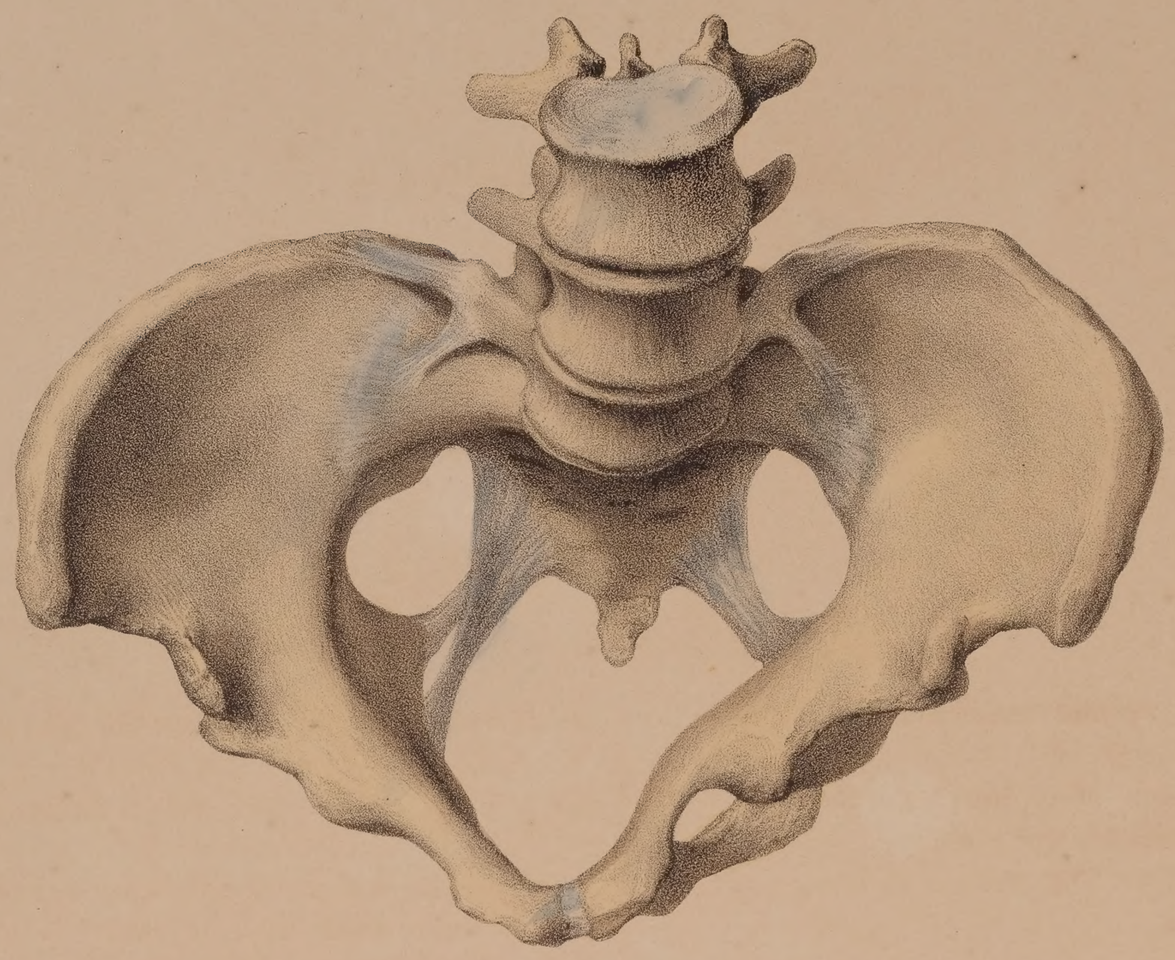
Fig. 2.

Dessiné d'après nature, par Emile Beau.

Publié par Germer Baillière, à Paris.

Imp: Lith: de Fourquemin, r: du Four St G.n 17.

Fig. 1.



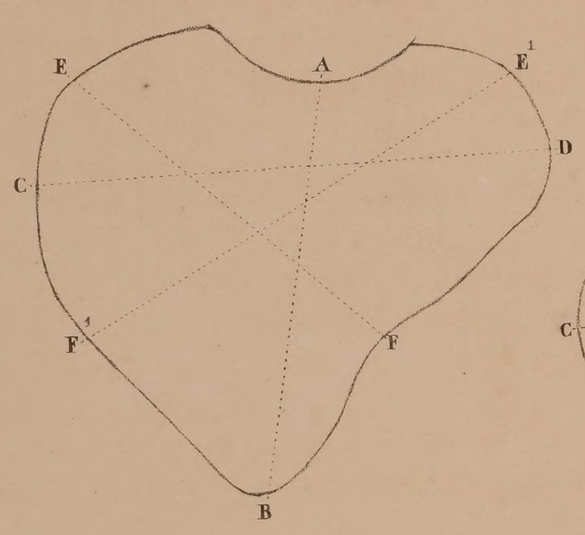


Fig. 2.

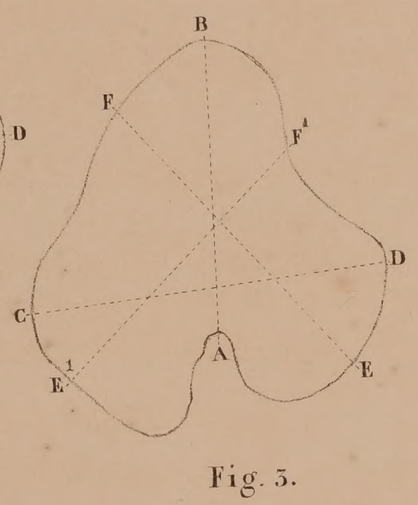


Fig. 3.

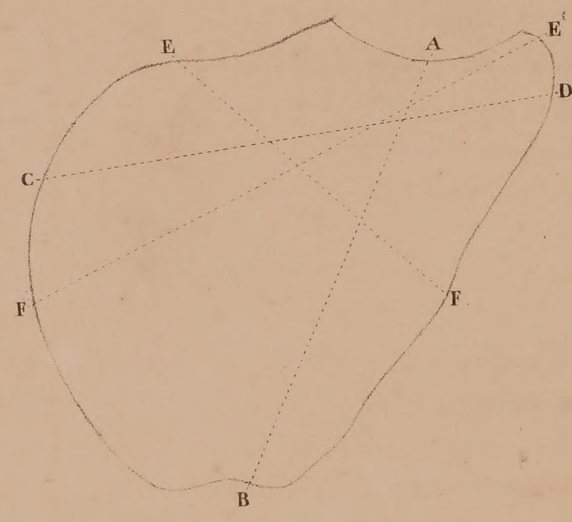


Fig. 5.

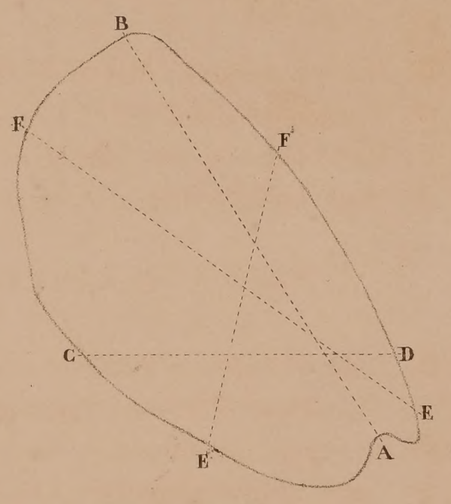


Fig. 6.

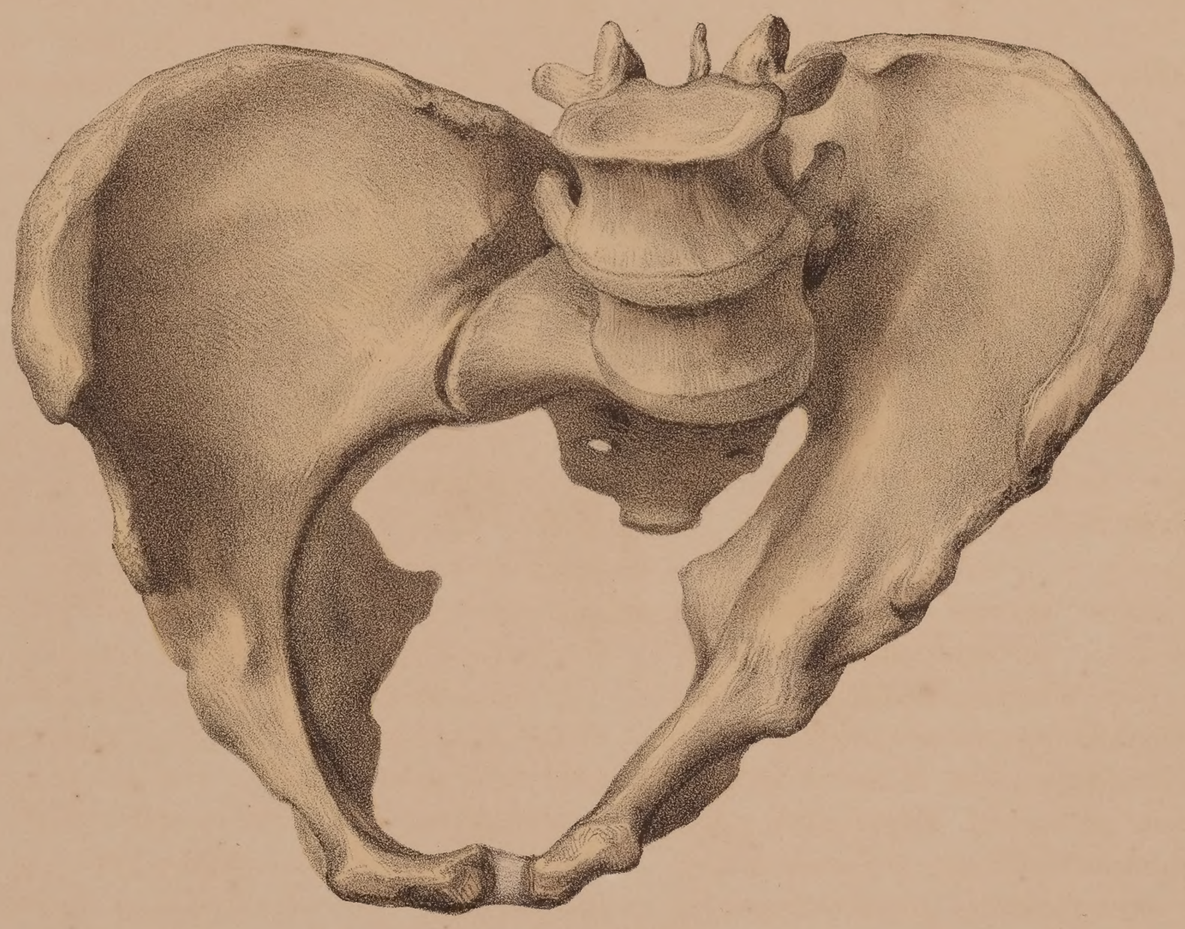


Fig. 4.

Dessiné d'après nature, par Emile Beau. Publié par Germer Baillière à Paris. Imp: Lith: de Fourquemin, r du Four S.t G.n N.17.

PLATE IX.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

Figure 1.—Female pelvis seen from above.

This pelvis is deformed by the projection forwards of the pubic symphisis, in consequence of the abnormal curve inwards of the horizontal ramus of the left os pubis especially. The pelvis is also generally deficient in capacity.

Figure 2.—Outline of the brim of *Figure* 1.

A, B. Antero-posterior diameter, three inches nine lines.
C, D. Transverse diameter, four inches eight lines.
E, F. Right oblique diameter, four inches.
E', F'. Left oblique diameter, four inches four lines.

Figure 3.—Outlet of *Figure* 1 in outline.

A, B. Antero-posterior diameter, two inches ten lines.
C, D. Transverse diameter, three inches three lines.
E, F. Right oblique diameter, three inches three lines.
E', F'. Left oblique diameter, two inches ten and a half lines.

Figure 4.—A female pelvis seen from above.

In this pelvis the situation of the left sacro-iliac synchondrosis is seen, though it is impossible to discover any traces of the articulation itself, as there is no prominence nor bony inequality whatsoever. The iliac fossa of the same side, is brought very close to the promontory of the sacrum; and this bone itself is diminished in extent by so much of it, as lies to the outside of the first foramen of the left side, the point which corresponds to the consolidation of the sacrum with the ilium. The deformity seems only, or principally at all events, to affect the left half of the pelvis; the promontory of the sacrum, instead of being opposite the symphysis pubis, as usual, is opposite the left acetabulum.

Figure 5.—Outline of the brim of *Figure* 4.

A, B. Antero-posterior (sacro-pubic) diameter, four inches and a quarter.
C, D. Transverse diameter, nearly four inches and a half.
E, F. Right oblique diameter, two inches three quarters.
E', F'. Left oblique diameter, five inches.

Figure 6.—Outline of the outlet of *Figure* 4, the sacro-sciatic ligaments, supposed to be in their places.

A, B. Antero-posterior (cocci-pubic) diameter, four inches ten lines.
C, D. Transverse diameter, three inches three lines.
E, F. Right oblique diameter four inches and a quarter.
E', F'. Left oblique diameter, two inches eight lines.

REMARKS.—Fig. 1. The deformity here is general, the bones of the pelvis must all have been softened together, although those of the left side have yielded in a much greater degree, than those of the right. The individual may have felt more at her ease in resting on the left, than on the right lower extremity, and in this way, the weight of the body being more constantly thrown upon the left acetabulum, the greater amount of deformity on this side may have been produced.

Fig. 4. This is a well marked instance of that oblique contraction of the pelvis, to the consideration of which Naegele has devoted his powers in a valuable Monograph. This deformity is highly important in an obstetric point of view, inasmuch as from its producing no lameness, it has never been recognized during life. Out of twelve females, having such pelves, whose histories are known, eleven sunk either during or soon after severe instrumental delivery, or actually died undelivered. In one the uterus was ruptured. In one case only, where the pelvis affected with this deformity, was originally constructed on a large scale, the woman gave birth to seven living and well formed children. Once she required the use of the forceps, from weakness of pains, but not from obstruction. She subsequently died from an accidental peritoneal inflammation.

The Professor of Heidelberg has collected, or referred to more than thirty existing specimens of oblique pelvis. In some it exists on the right, in others on the left side. He believes that such pelves are not very uncommon, and that they are owing to an anomaly of development independently of external violence or constitutional disease. He considers these pelves as belonging to a separate class of deformity, possessing numerous characters which distinguish them from rachitic pelves, and those which are deformed in adult age from softening of the bones.

The contraction takes place in the direction of one of the oblique diameters and is attended with a complete anchylosis, or rather synostosis of the sacro-iliac symphysis, in consequence of an imperfect development of one half of the sacrum, and of a portion—more or less—of the corresponding os ilium. The bones are perfectly healthy in structure, and differ in no wise from the bones of young and well formed subjects. There is neither lameness nor limping, nor any sign of scrofula, nor of mollities ossium, nor of violence having occurred at any time to the pelvis.—J. S. S.

PLATE X.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

Figure 1.—Pelvis of a ricketty female seen from above.

Figure 2.—The same pelvis seen from below.

In the skeleton from which this pelvis was taken, the femurs, tibiæ, and fibulæ were greatly distorted. The vertebral column presented two great curvatures, one of which embraced all the lumbar, and the four last dorsal vertebræ, and had its convexity turned towards the left; the other curve included the remaining dorsal vertebræ, and had its convexity towards the right. The ribs had also suffered great distortion, and the antero-posterior diameter of the chest was much greater than in the normal state.

In this pelvis, in consequence of the great distortion of the sacrum, its promontory projects considerably. The fifth lumbar vertebra also projects very much forwards, and is but a finger's breadth distant from the inner wall of the right acetabulum. The summit of the os coccygis, is at the distance of but one inch and a half from the anterior aspect of the base of the sacrum.

The ossa innominata are bent both forwards and backwards, in consequence of the two acetabulæ being driven inwards; by which the brim has acquired something of the shape of the heart upon playing cards.

Figure 3.—Circumference in outline of the brim of *Figure* 1.

A, B. Antero-posterior diameter, a little more than two inches.
C, D. Transverse diameter, nearly four inches.
E, F. Right oblique diameter, nearly three inches, and three quarters.
E', F'. Left oblique diameter, upwards of two inches and three quarters.

Figure 4.—Outlet of *Figure* 1, in outline.

A, B. Antero-posterior diameter, two inches and three quarters.
C, D. Transverse diameter, one inch eleven lines.
E, F. Right oblique diameter, two inches five lines.
E', F'. Left oblique diameter, two inches ten and a half lines.

Figure 5.—Pelvis of a ricketty subject.

The sacrum here is straight to within an inch of its apex, it is of normal breadth; its thickness is inconsiderable.

The bodies of the ossa pubis, and the ascending rami of the ischia are very thin; the bodies of the pubes are but two lines in thickness. The thyroid foramina are of great size; the left ilium is almost vertical. The whole pelvis is flattened from before backwards.

The lumbar portion of the spinal column is turned almost directly backwards and somewhat to the right side.

Figure 6.—Form in outline of the brim of the pelvis *Figure* 5.

A, B. Antero-posterior diameter, one inch nine and a half lines.
C, D. Transverse diameter, upwards of five inches and a quarter.
E, F. Right oblique diameter, four inches and a quarter.
E', F'. Left oblique diameter, upwards of four inches and three quarters.

Figure 7.—Form in outline of the outlet of *Figure* 5.

A, B. Antero-posterior diameter, ten inches two lines.
C, D. Transverse diameter, five inches five lines.
E, F. Right oblique diameter, nearly four inches.
E', F'. Left oblique diameter, four inches and a half.

REMARKS.—The pelvis represented in figures 1 and 2, may be viewed as an instance of ricketts to the last degree of intensity. The individual may have been originally well formed, but the peculiar defect in the nutritive process which is known by the name of *Rachitis*, and which affects the bony element of the organism so remarkably, has suffered all the hard parts to be moulded by the soft, and by their own weight as if they had had no greater degree of consistence than putty.

The pelvis represented in Figure 5, appears to be from one of the unfortunate subjects, who come into the world with the bones calculated upon an inadequate scale. They are not merely deficient in the earthy matter which should give them solidity, but they are positively and generally too slender. Many individuals of this constitution never walk, and are such objects of pity, that they escape the risk of becoming pregnant. Ricketty women, however, deformed to the last degree, do contrive commonly enough to fall with child,—in the legitimate way, too; not aware, doubtless, of the consequences they are bringing upon themselves. M. Moreau, in his "Traité Pratique," speaks of "a lady whose pudenda were turned not only backwards, but somewhat upwards, *en sorte que le rapprochement des sexes n'avait pu avoir lieu que comme il se fait chez les quadrupeds*," and who, nevertheless married, became pregnant, carried the child the full time, and then fell a victim to the unavoidable process of forcible artificial delivery.

Fig. 1.

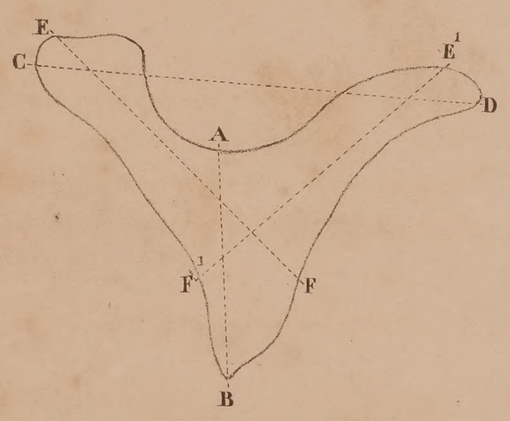


Fig 3.

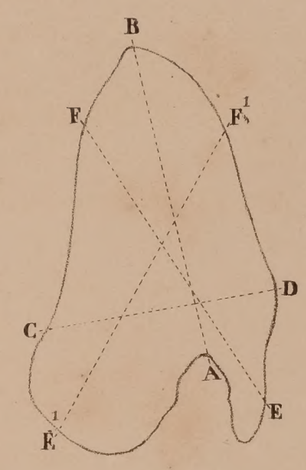


Fig. 4.

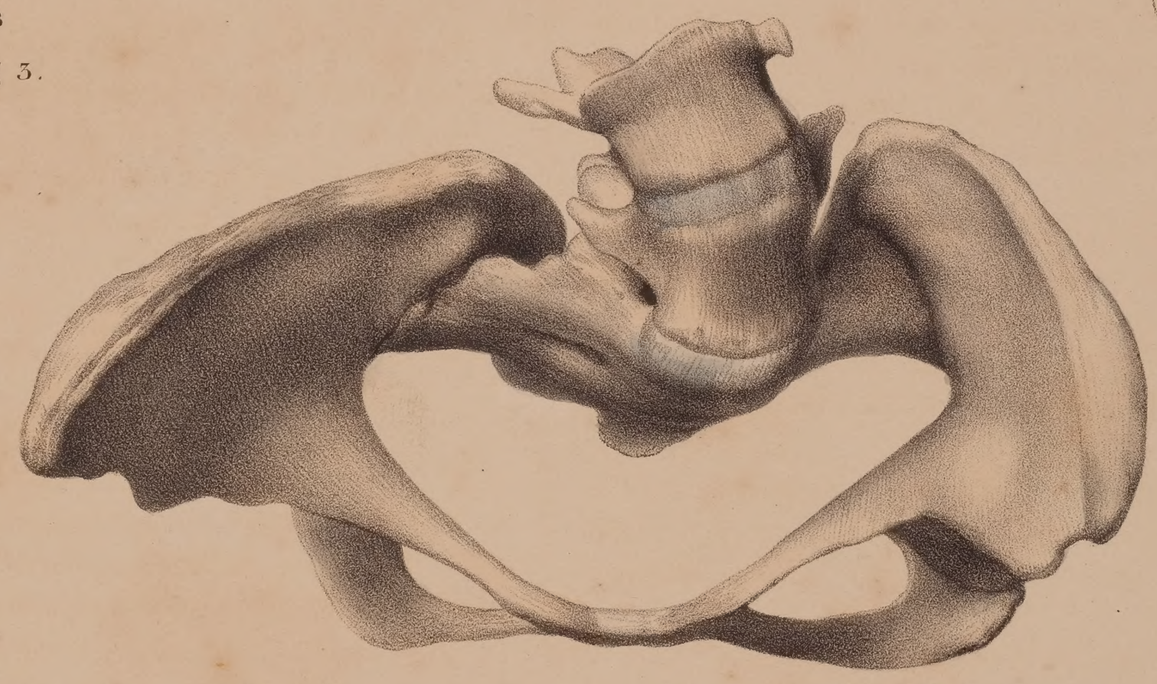


Fig. 5.

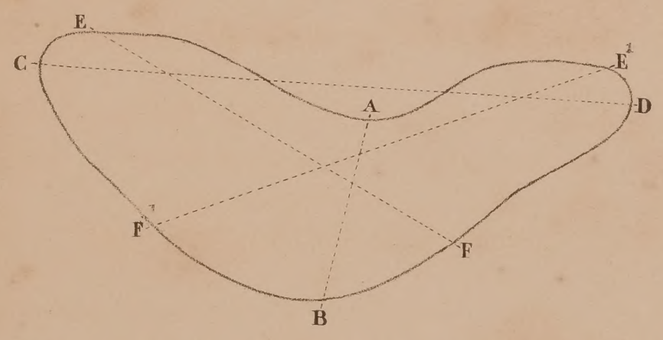


Fig. 6.

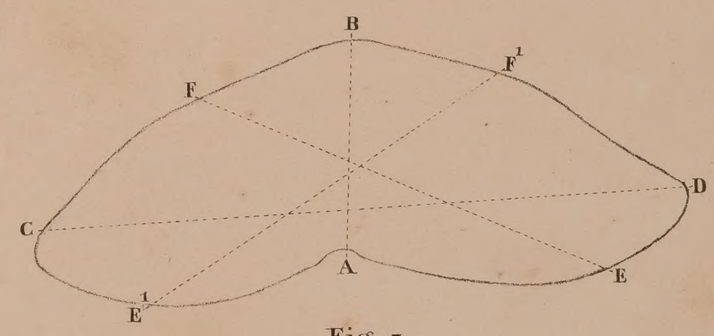


Fig. 7.

Fig. 2.

Dessiné d'après nature par Emile Beau.

Publié par Germer Baillière, à Paris.

Imp. Lith. de Fourquemin, r. du Four S.t G.n N.o 17.

Fig. 1.

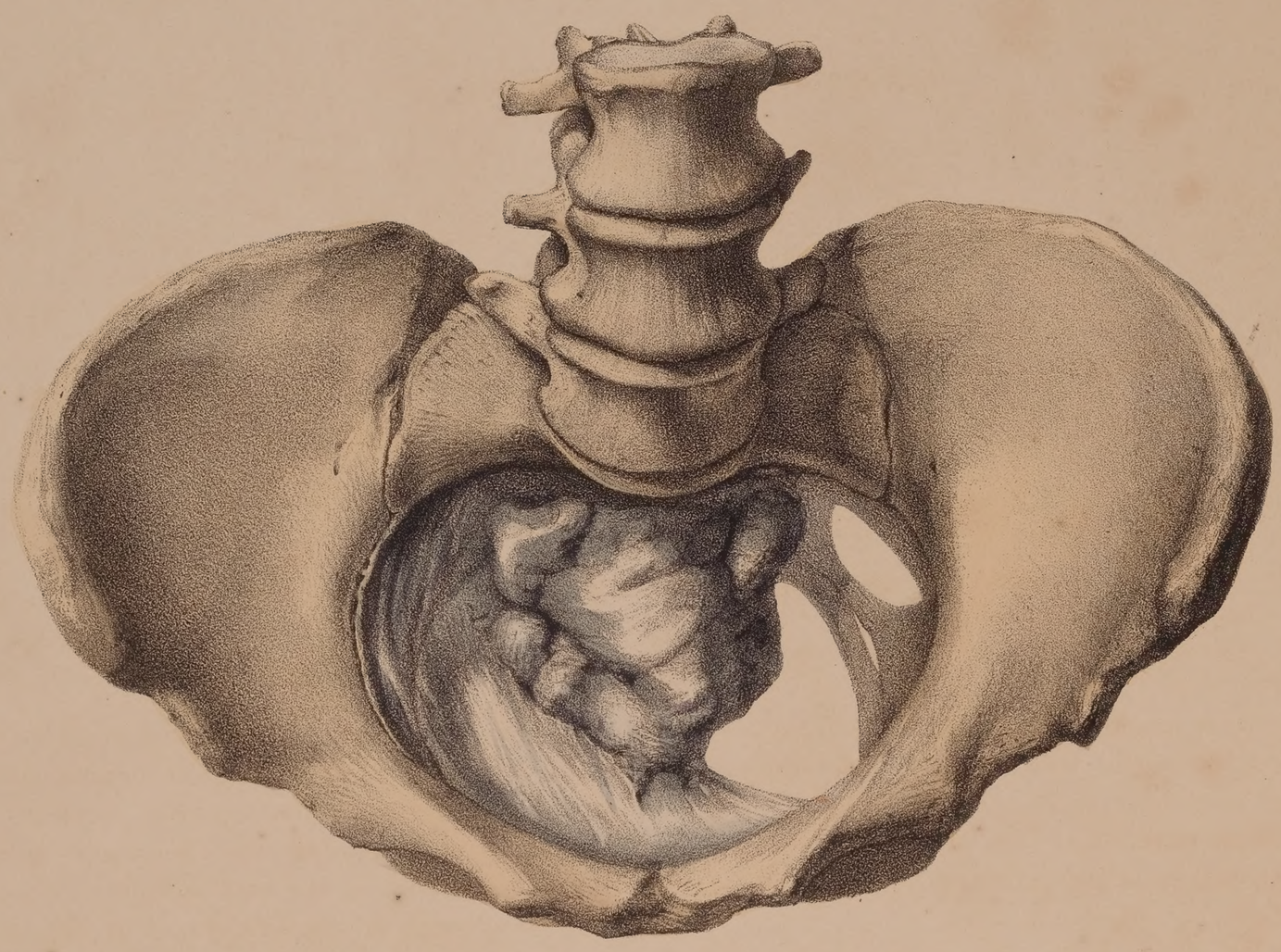


Fig. 2.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière, à Paris. Imp. Lith. de Fourquemin, r. du Four St.G.n.17.

PLATE XI.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

TUMOURS DEVELOPED WITHIN THE PELVIC CAVITY.

Figure 1.—Represents a pelvis of natural configuration and size, containing a round and nodulated fibro-cartilaginous tumor, nearly three inches in diameter. It adheres posteriorly to the anterior surface of the sacrum, from the apex of that bone to within an inch of the promontory. Its anterior part is unattached, and is at the distance of one inch from the symphysis pubis.

The sacrum, on which the tumour rests, has undergone no alteration; the tumour, indeed, does not adhere very intimately to the sacral periosteum, which could not therefore be its point of origin; it is a fibrous body which after having been formed amongst the soft parts of the pelvic cavity, has at length become attached to the anterior aspect of the sacrum. The membrane, which closes the bottom of the pelvis on the right side, is formed by the peritoneum and superior perineal fascia.

Figure 2.—The pelvis, of which a portion is here represented, is also quite normal in point of size and configuration; it has been sawed across behind the acetabula, so as to shew its internal and anterior aspect. The cavity is almost entirely filled up by an enormous irregular and nodulated tumour, the surface of which is covered with asperities. The longest diameter, (vertical in its direction) of this tumour, is five inches in length. It is adherent to the inferior part of the pubic symphysis, to the internal surface of the ascending ramus of the ischium, to the descending ramus of the pubis, and the pelvic surface of the right acetabulum. Part of the tumour projects through the right thyroid foramen, and descends below the level of the ischia. The bones of the pelvis are neither altered nor deformed, and it seems evident, notwithstanding the hardness of the tumour, that it was not formed upon or from any of them; the asperities on its surface are produced by a chalky matter, divided into large granular crystals, united into a mass by an organized fibrous substance. It bears a close resemblance to an exostosis.

General Remarks.—Morbid productions of various kinds, may encroach upon the cavity of the pelvis, and interfere with parturition in a greater or less degree. Growths or tumours may be developed on the internal surface of the bones of the pelvis, in its fibro-cartilaginous articulations or ligaments, and also in the texture of the soft parts themselves, which are contained within its cavity. Such tumours may be regarded as among the most serious complications of pregnancy; for without the interference of art, they either obstruct or render impossible the passage of the child, or they lead to contusion, laceration and destructive inflammation of the neighbouring soft parts, or the tumours themselves inflame from injury. Every woman who is affected with a tumour within the pelvis, should undoubtedly live *absque marito;* but when in ignorance of the probable consequences of pregnancy, a female so situated has married and conceived, and is not seen until the period for the induction of abortion or premature labour has passed over, the only alternatives that offer a chance for her safety, are the extirpation of the tumour through the perineum, or the early performance of the Cæsarian operation.

Fig. 1. Is a well marked instance of a fibro-cartilaginous tumour adhering to the sacrum. The natural capacity of the pelvis and the size, situation and extent of adhesion of tumours like this, all require consideration. Dr. Drew extirpated one attached by a pedicle to the right sacro-sciatic ligament, and with the forceps extracted a living child, the woman recovering completely. The tumour measured fourteen inches in circumference, and weighed 2 lb. 8 oz. (Ed. Med. and Surg. Journal, vol. 1, p. 23.) Mr. Burns removed a similar tumour having extensive adhesions to neighbouring parts; and a dead child was then expelled by the natural pains. In this instance peritoneal inflammation followed; but under active treatment it was subdued, and the woman also recovered.

Fig. 2. Seems to be an instance of calcareous deposition on a fibrous tumour, rather than a proper exostosis. Cases where true exostoses have impeded or rendered child birth impossible are very rare. Two instances, however, of exostosis of the sacrum so completely obstructing delivery, per vias naturales, as to require the Cæsarian operation will be found recorded, the one by Naegele, (On deformities of the Pelvis, translated into French, by M. Danyau, p. 214,) the other in the Med. and Surg. Journ. April, 1831. The operation was performed in both cases long after the commencement of the labour; in both dead children were extracted, and the women both died, the first on the fifth day, the second seventeen hours after the operation. In both instances, the tumour occasioned little or no uneasiness during pregnancy, and seems to have originated from a fall upon the buttocks many years before.

Tumours developed in the soft textures within the pelvis, will be more advantageously made the subject of remarks in considering Pl. 20. —J. S. S.

PLATE XII.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

Figure 1.– A deformed pelvis seen from above.

The brim of this pelvis forms nearly a complete circle; the antero-posterior diameter, however, is the longest. The sacrum is straight, the two ischia are very much approximated, and the arch of the pubis is extremely narrow.

Figure 2.—Circumference of the brim of *Figure* 1 in outline.

A, B. Antero-posterior diameter, four inches and three quarters.
C, D. Transverse diameter, four inches and a quarter.
E, F. Oblique diameter, four inches and a half.

Figure 3.—Outlet of the same pelvis in outline.

A, B. Antero-posterior diameter, three inches and three quarters nearly.
C, D. Transverse diameter, one inch and three quarters.
E, F. Right oblique diameter, three inches and three quarters.
E', F'. Left oblique diameter, three inches three lines.

Figure 4.—The right half of a pelvis which had been fractured and united irregularly.

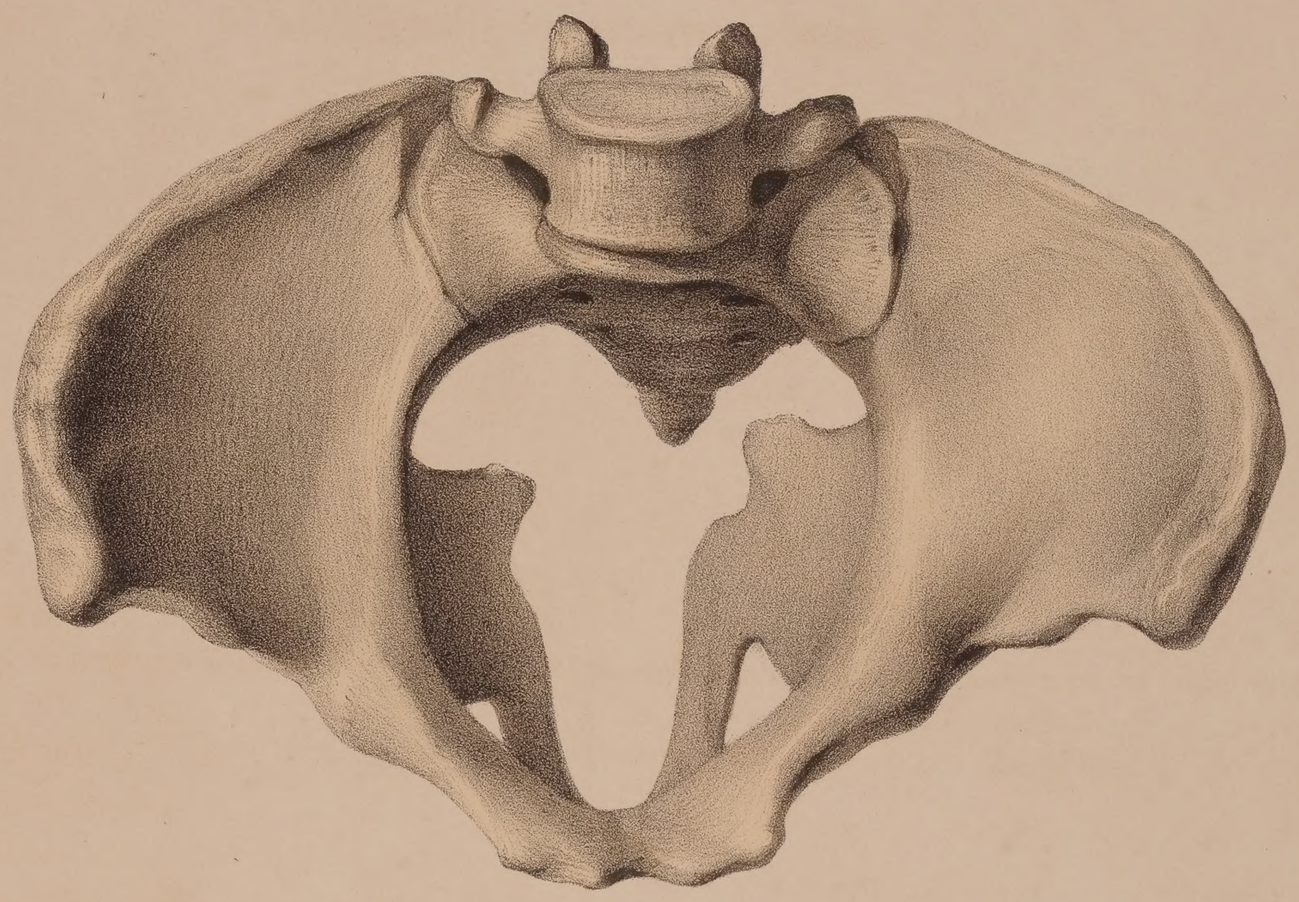
The acetabulum has been here driven in by the head of the femur, so that the internal wall of this cavity projects about an inch and a half into the cavity of the pelvis; the ilium has also been fractured to the outside of the right sacro-iliac synchondrosis; the external portion of the fossa iliaca, in consequence of the manner in which reunion has taken place, projects inwards, so as to approach the sacrum, which has the effect of bringing the promontory of the sacrum, close to the projection formed by the acetabulum in its new situation.

Remarks.—Fig. 1. The deformity of the brim was here obviously of little consequence; it would never have hindered parturition. It is the deformity of the outlet which is worthy of peculiar attention, and which is of a kind and amount that would have made natural delivery impossible. The softening of the bones cannot, in this instance, have gone to any great extent. The acetabula and the rami of the pubes have maintained their positions. The tuberosities of the ischia and the plates and branches which connect them with the other parts of the pelvis, seem alone to have given way.

How has the deformity arisen in this instance? Apparently by the pressure of the superincumbent body upon the tuberosities of the ischia, the person being in the sitting posture. The bony cincture has had strength enough to resist the inward thrust of the heads of the thigh bones in the standing posture, the ischia only have yielded, when the weight of the body was thrown upon them whilst seated.

Fig. 4. Fractures of the bones of the pelvis are the result of so great a degree of violence, that they generally prove fatal immediately, or at no long interval after the received injury. Should such an injury, not prove fatal, however, and the subject of it, a female, afterwards conceive, and reach the full term of pregnancy, the case must be managed on principles similar to those alluded to in the remarks under Pl. XI. Contusion of the soft parts, is more to be dreaded in such cases, than in those of simple deformity, in consequence of the sharp irregularities, which mostly attend the bony union. In one instance, in which a female suffered a fracture of the pelvis, from a loaded cart passing over the lower part of the body, and recovered, and afterwards became pregnated, Mr. James Barlow of Lancashire performed the Cæsarian operation; a dead child was extracted and the woman survived. This is almost the only instance on record of the Cæsarian operation performed in Great Britain, not having proved fatal to the woman, (Med. Records and Researches, p. 154.)—J. S. S.

Fig. 1.



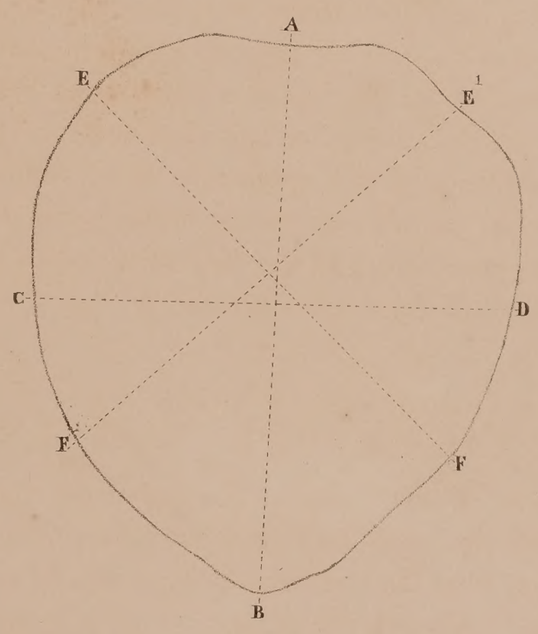


Fig. 2.

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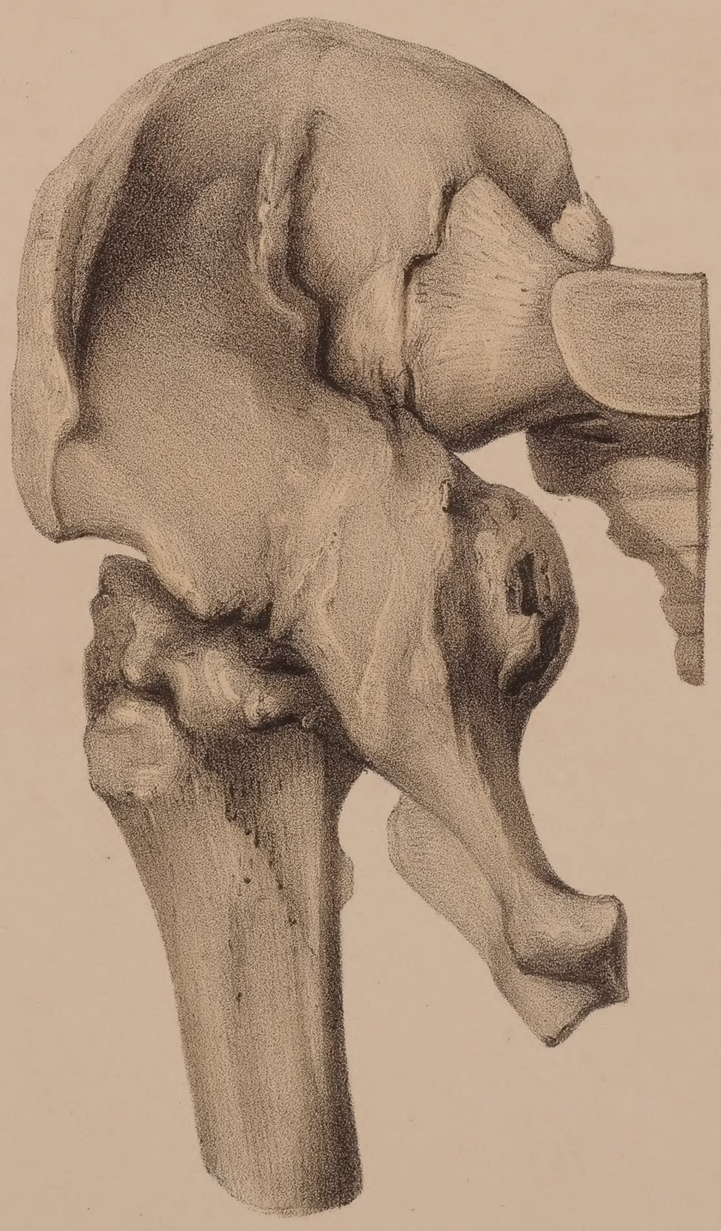

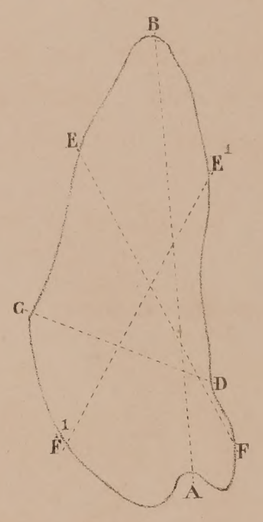

Fig 3.

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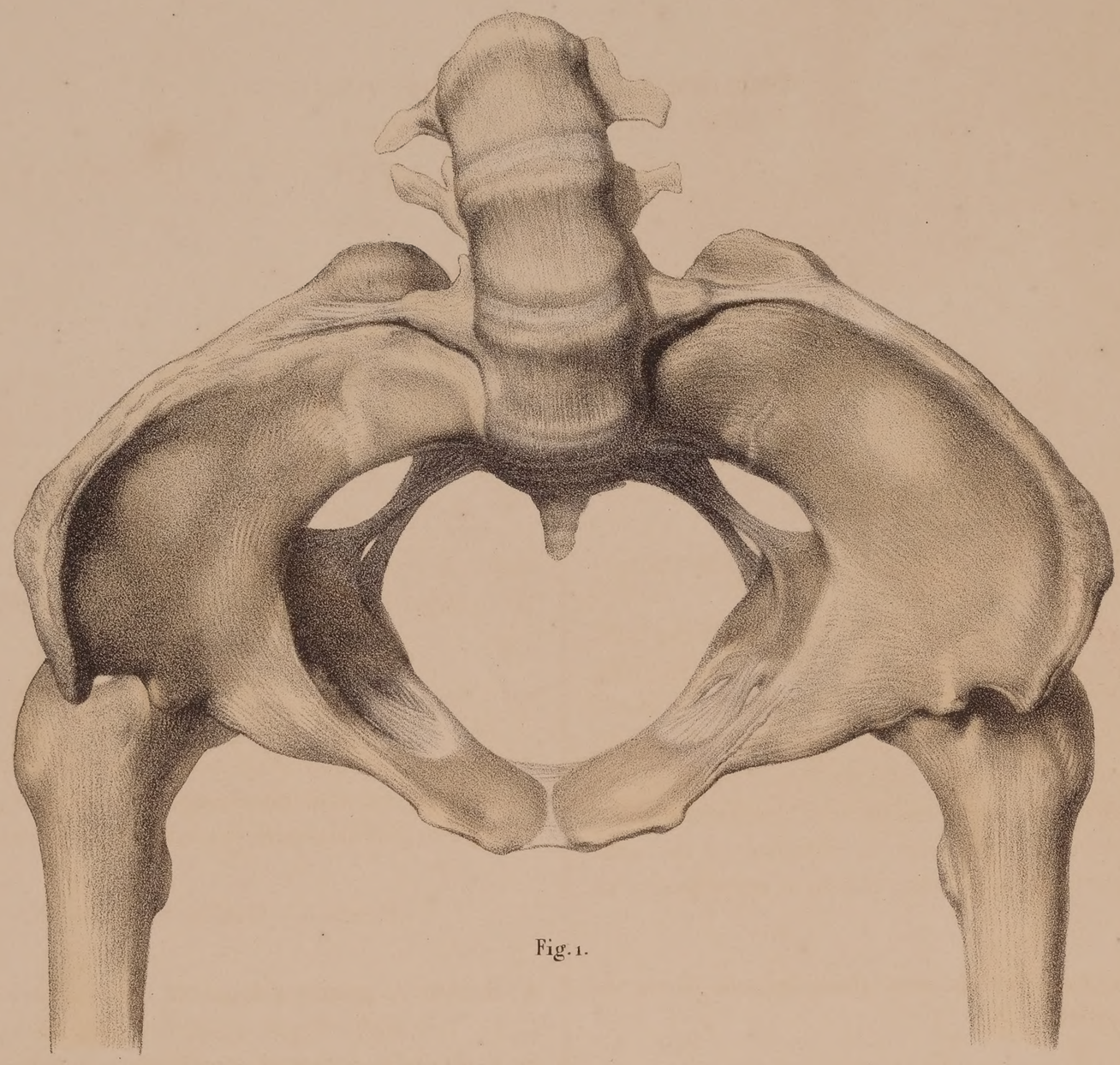

Fig. 1.

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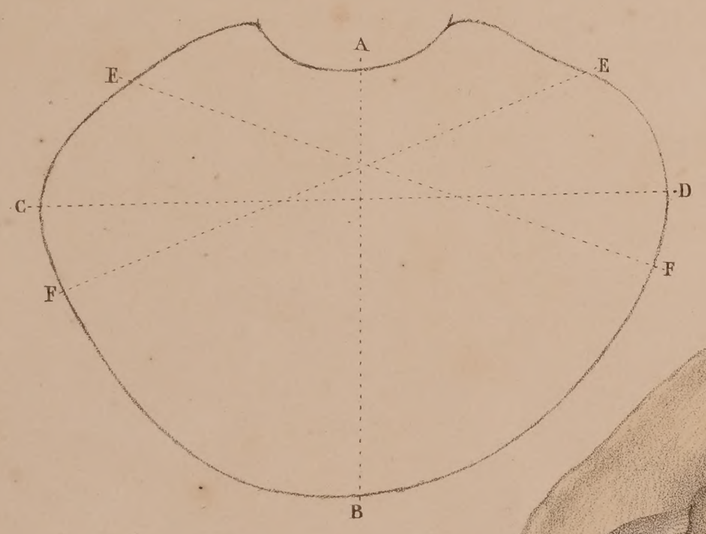
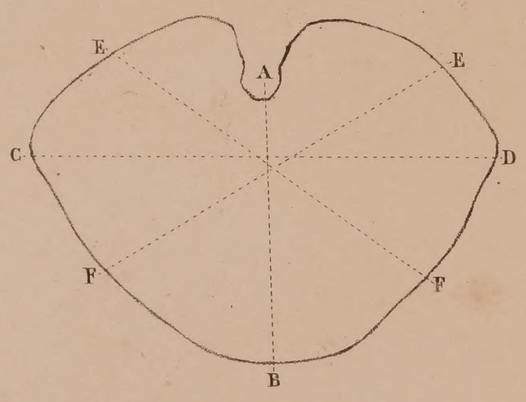


Fig. 4.



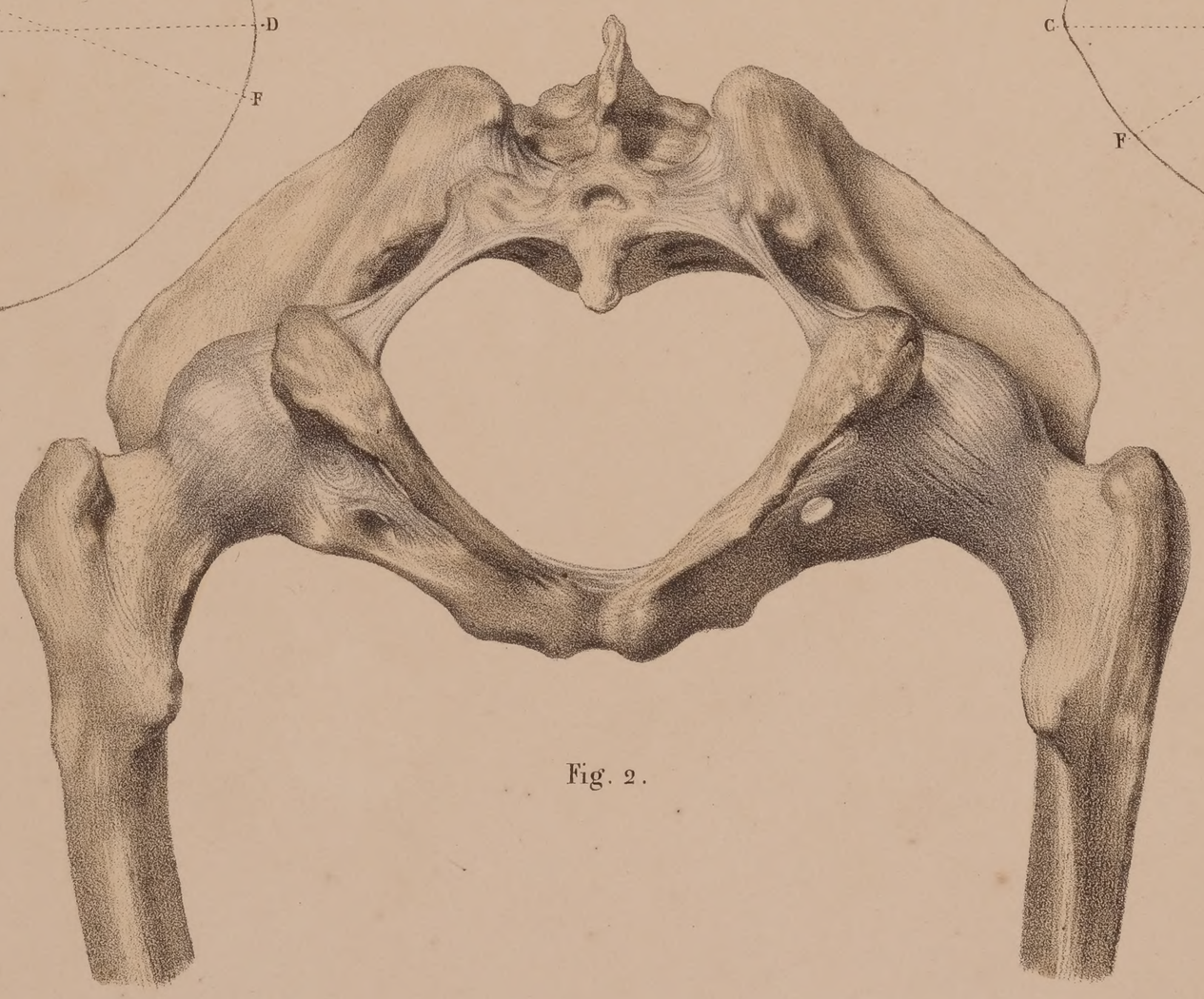


Fig. 2.

Dessiné d'après nature par Emile Beau.

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PLATE XIII.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

Figure 1.—Pelvis of a ricketty female seen from the brim.

The pelvis is here represented in the direction it had, when the subject was alive and standing erect. The inclination forward is so great, that the anterior surface of the sacrum is turned directly downwards. The direction of the cavity of the pelvis and of its aperture, is nearly parallel to the horizon. The outlet is directed backwards and even slightly upwards. The vertebral column seems to rest upon the posterior surface of the sacrum, in consequence of the change of direction of the articulating surfaces. This pelvis presents many points of resemblance to those of quadrupeds.

Figure 2.—The same pelvis seen from behind, from its outlet.

By comparing this figure with the preceding one, we see the great disproportion that exists between the brim and the outlet, the former being larger than natural, and the latter considerably smaller.

Figure 3.—Outline of the brim.

A, B. Antero-posterior diameter, rather more than five inches and a half.
C, D. Transverse diameter, rather more than five inches and a half.
E, F. Oblique diameters, upwards of four inches three quarters.

Figure 4.—Outline of the outlet.

A, B. Antero-posterior diameter, two inches eight lines.
C, D. Transverse diameter, three inches eleven lines.
E, F. Oblique diameters, nearly three inches and a half.

PLATE XIV.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

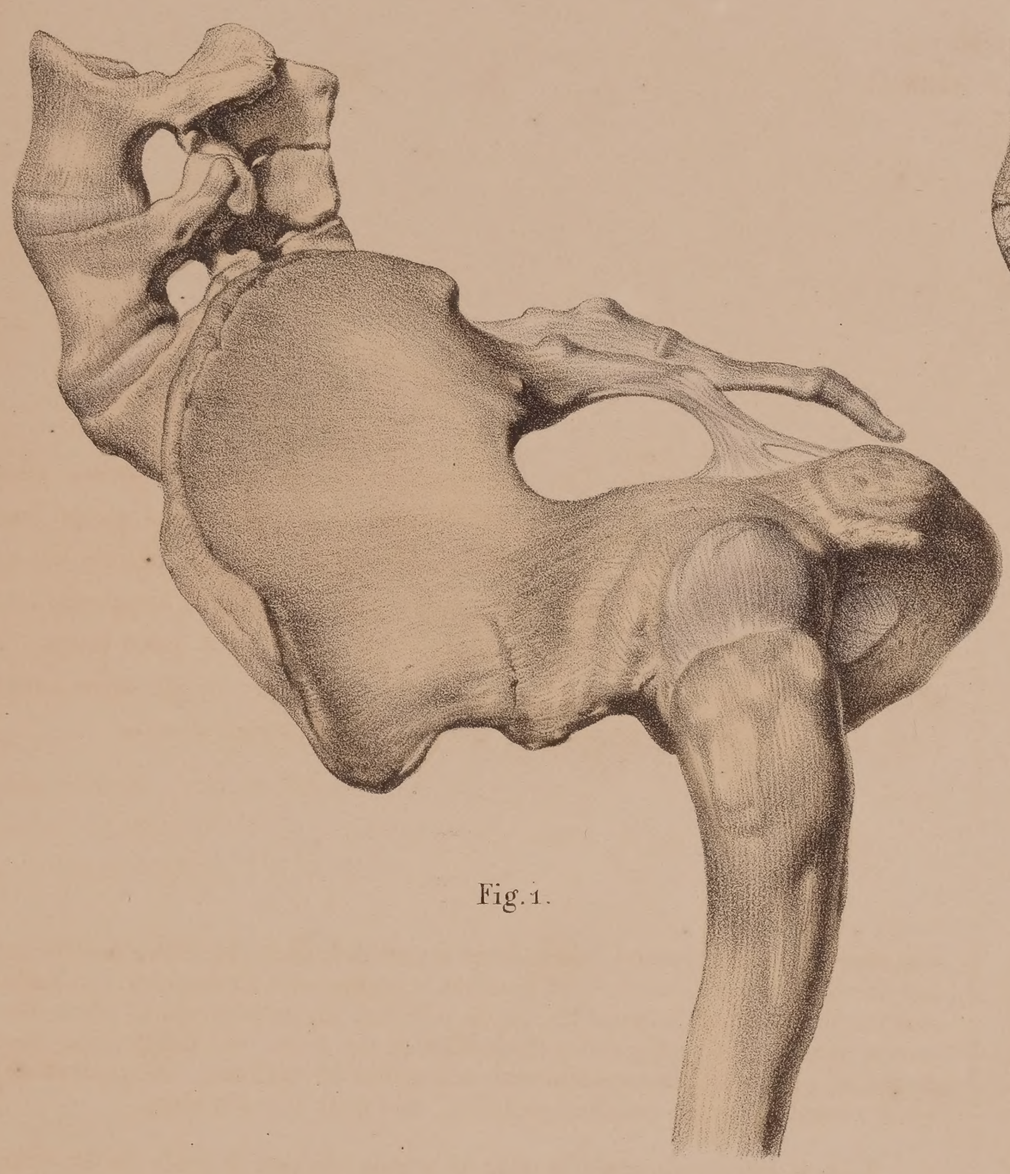
Figure 1.—External surface of the pelvis represented in Plate XIII.

Figure 2.—Internal surface of the same pelvis sawn into two in the mesial line.

Figure 3.—In this figure we have another peculiarity of this remarkable pelvis represented. The sacrum, which is natural, forms an inclined plane directed forwards, whilst the ossa pubis are directed backwards and inwards; by this conformation two inclined planes are produced, which are at some distance apart superiorly, but approach much more closely inferiorly, and of which the effect would have been, that the head of a fœtus passing through such a pelvis, would have become ever the more closely impacted, the farther it passed down.

REMARKS.—The pelvis figured in this and the preceding plate, presents an exquisite instance of deformity of great deviation from the natural obliquity of this part to the vertebral column. The flattening of the sacrum, the inward direction of the lower part of the ossa pubis, the funnel shape of the cavity and the great narrowing of the outlet, are admirably shown in the side views. The pelvis was taken from a female, ricketty in the highest degree from her infancy. During her life, the anterior wall of the abdomen formed a pendulous pouch and sustained the weight of all the abdominal and pelvic viscera; and in the latter period of her pregnancy, the enlargement of the uterus impeded the descent of the diaphragm so much as to threaten suffocation when she quitted the standing position. This unfortunate woman, indeed, had neither sat nor lain down for three months before her death, but slept in an upright position, with the elbows supported on cushions and the head resting between the hands. When labour came on in 1813, Desormeaux attempted to bring down the head with the lever, but this proving insufficient, he perforated the cranium and accomplished delivery, the patient all the while remaining in the standing position. She sank in a few days.

This is the pelvis of the female to whom allusion is made in the remarks upon fig. 5, Pl. X. It was a very fit case for the induction of premature labour.
—J. S. S.



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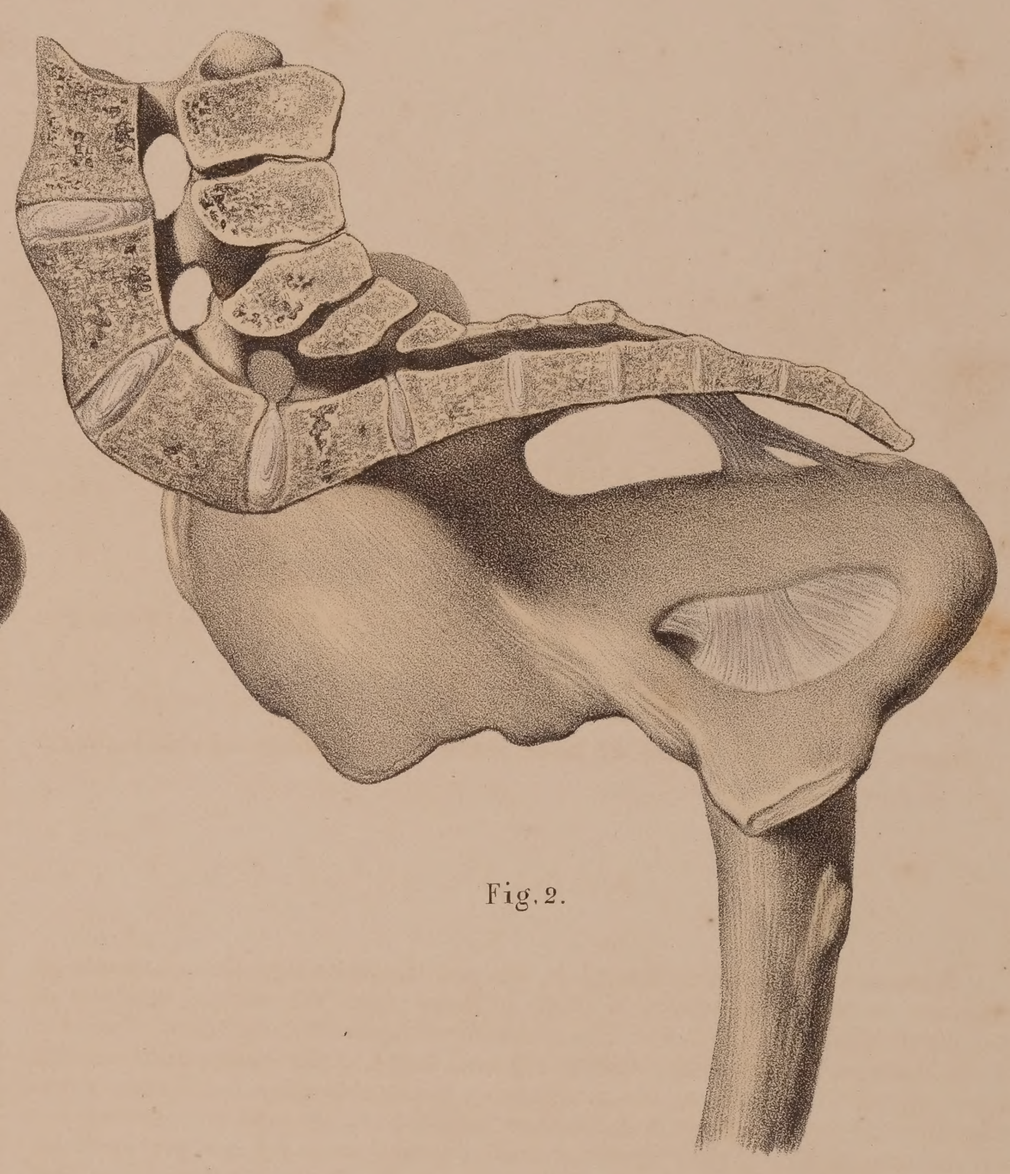

Fig. 2.

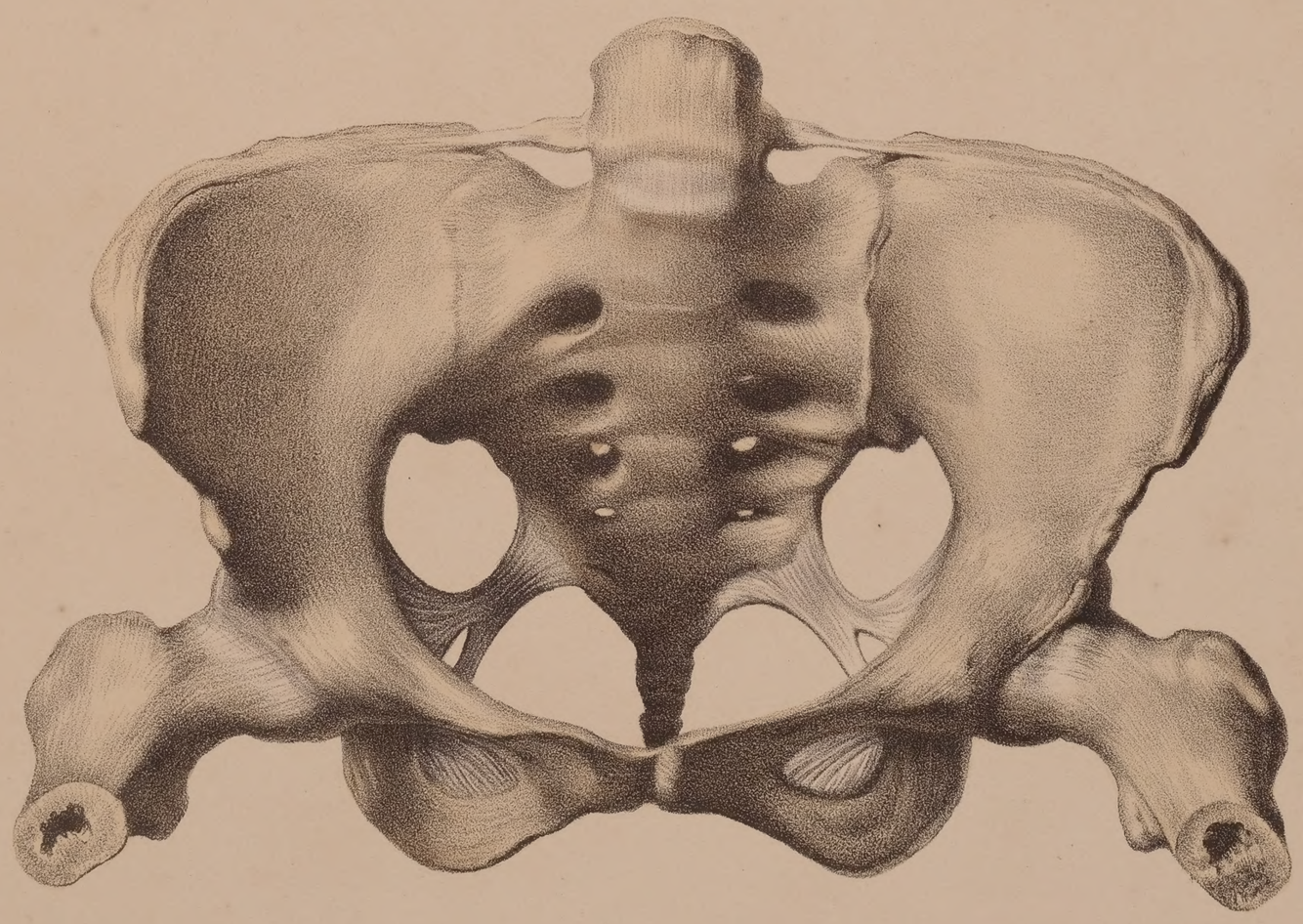

Fig. 3.

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Fig. 1.

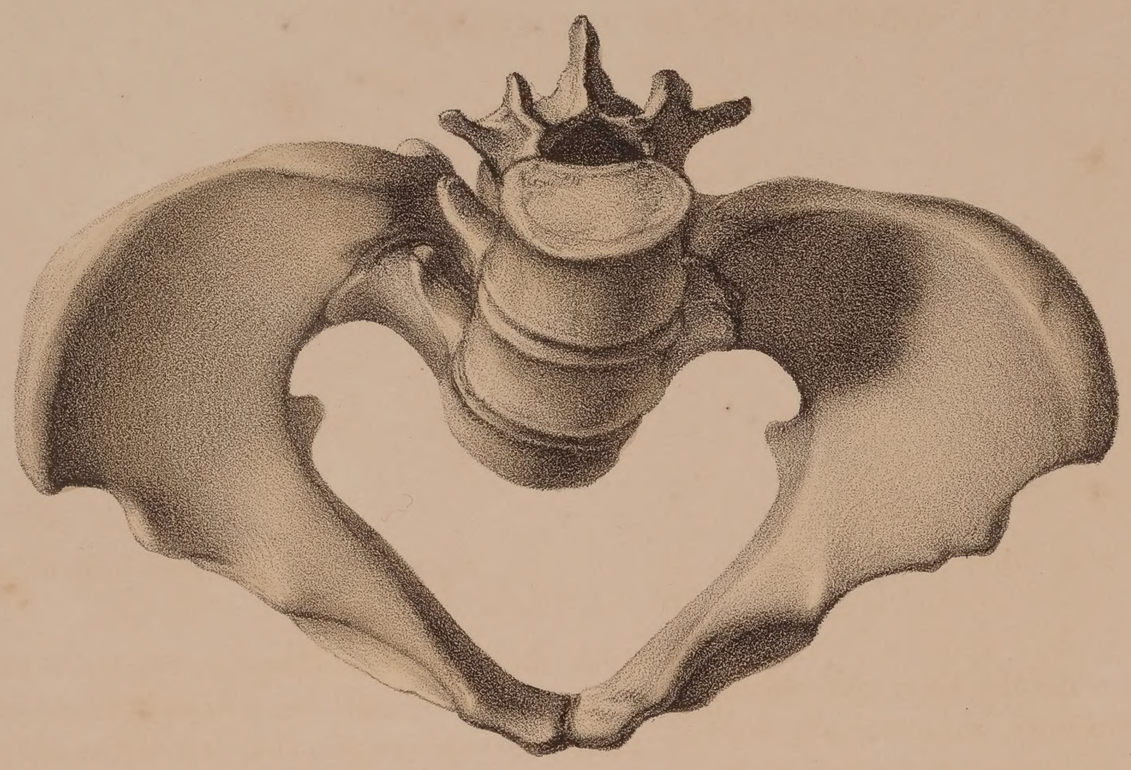

Fig. 3.

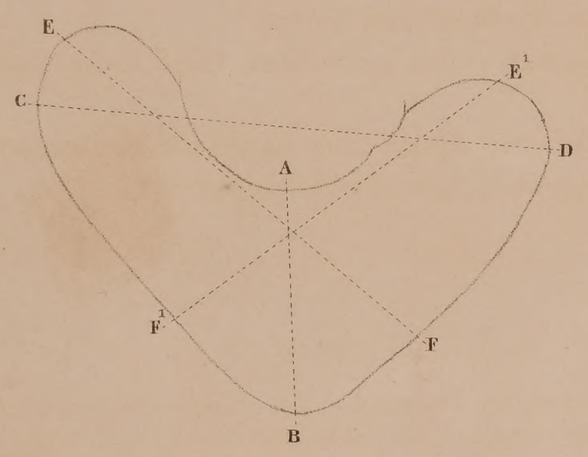

Fig. 4.

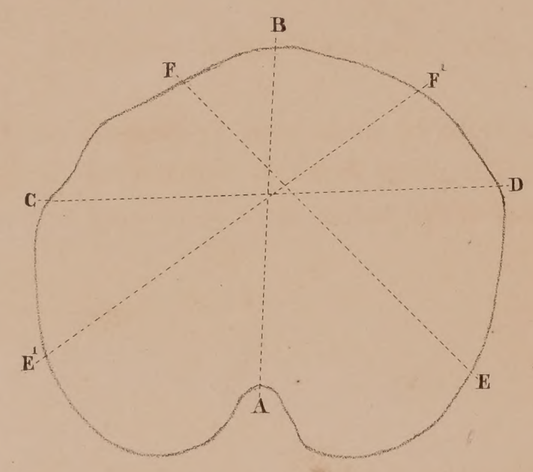

Fig. 2.

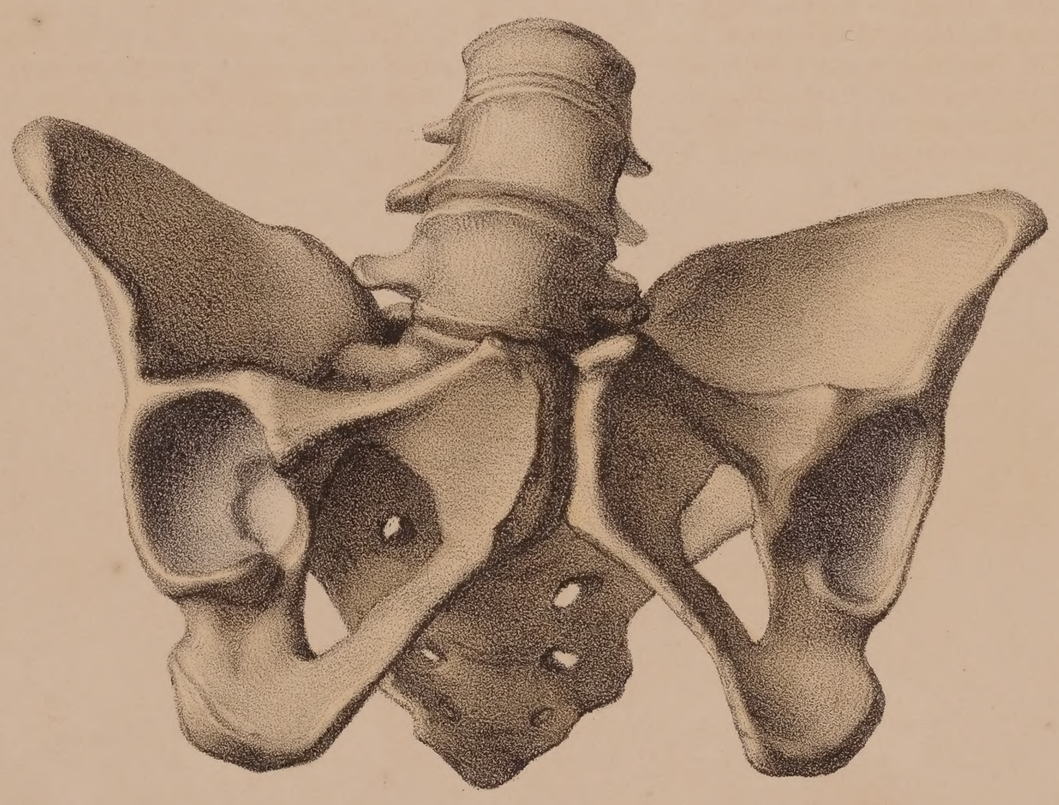

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PLATE XV.

DEFORMITIES OF THE PELVIS.

(HALF SIZE.)

Figure 1.—Deformed pelvis of an adult female, seen from above.

In this pelvis the brim very closely resembles the heart upon playing cards. It is smaller than natural in all directions, but more so in some than in others. The transverse diameter passes through the very centre of the promontory of the sacrum, instead of dividing the interior of the pelvis into two.

Figure 2.—The same pelvis seen anteriorly.

In this position, the want of inclination downwards and forwards is made more apparent. The pubis in fact is higher than the promontory of the sacrum. The axis of the outlet is in some sort perpendicular to the horizon.

Figure 3.—Outline of the brim of this pelvis.

A, B. Antero-posterior diameter, two inches two lines.
C, D. Transverse diameter, four inches eight lines.
E, F. Right oblique diameter, four inches and a quarter.
E^{1}, F^{1}. Left oblique diameter, three inches and a half.

Figure 4.—Outline of the outlet of the same pelvis.

A, B. Antero-posterior diameter, three inches.
C, D. Transverse diameter, rather more than three inches and three quarters.
E, F. Right oblique diameter, nearly three inches and three quarters.
E^{1}, F^{1}. Left oblique diameter, upwards of four inches.

Remarks.—In most instances of deformity of the pelvis, there is also some departure from its normal obliquity, the effect of which is to change the direction of its axis. As the last plate represented an instance where the natural obliquity was increased, the pelvis figured in this plate shows the opposite state where the inclination to the spine is so little that the axis of the brim nearly corresponds with that of the trunk. This lessened obliquity of the pelvis, commonly arises from the relative sinking down of the sacrum and the rising up of the pubes, a disposition of parts which necessarily contracts the sacro-pubic diameter. In slighter degrees of this deformity, the head of the child is often directed during the labour against the upper part of the pubes from which it is with difficulty dislodged, but in the pelvis here figured, the sacro pubic diameter is far too much contracted to allow the passage of a viable fœtus, for it is generally admitted that such a result cannot happen where the sacro-pubic diameter is less than two inches and a half. A woman possessing such a pelvis who becomes pregnant, will require the induction of labour at an early period, or the operation of embryotomy.—J. S. S.

PLATE XVI.

PERINEUM OF AN ADULT FEMALE.

(FULL SIZE.)

A, A. Superior and internal surface of the thighs.
B, B. Gluteal region.
C, C. Anterior parietes of the abdomen.
D. Umbilicus.
E. Anterior commissure of the vulva.
F. Orifice of the anus.
G, G. Section of the labia majora, at the distance of an inch from the anterior commissure.
H. Clitoris.
I. Crus of the corpus cavernosum of the clitoris.
J. External orifice of the canal of the urethra.
K. Commencement of the vagina, in which is seen part of the anterior wall of the vagina.
L. Section of the adipose tissue and integuments of the gluteal region.
L¹. Section of the skin at the internal and superior part of the thighs and nates.
M. Apex of the os coccygis.
N, N. Tuberosities of the ischia.
O, O. Great sacro-sciatic ligaments.
P. Constrictor vaginæ muscle.
R. Erector clitoridis muscle.
S. Ischio cavernosus muscle.
T. Transversus perinei muscle.
U. Sphincter ani muscle.
V. Levator ani muscle.
X. Gracilis femoris muscle.
Y. Adductor magnus muscle.
Z, Z. Glutæi maximi muscles.

a. Internal pudic artery and vein after having passed between the sacro-sciatic ligaments.
b, b. Superior branch of the internal pudic artery.
c. Inferior or perineal branch of the same artery.
d. Inferior hemorrhoidal artery.
e. Branches of the pudic vein forming a kind of plexus on the transversus perinei muscle.
f. Vaginal plexus of veins.
g. Arterial and venous anastomotic arches situated at the root of the clitoris.
h. Trunk of the internal pudic nerve after emerging from between the sacro-sciatic ligaments.
i. Superficial or perineal branch of the internal pudic nerve.
j. Second superficial branch, here supplied by the trunk of the pudic nerve, which runs to be distributed in the labia majora.

Remarks.—The word perineum is here used in its widest sense to designate all those soft parts which form the parietes of the outlet of the pelvis, and not that more limited space between the rectum and vulva, to which the name is frequently restricted. Within this space are situated the terminal aperture of the alimentary canal, the anus; and the common one of the urinary and genital organs, the vulva. The minute structure, the functions and the alterations from disease or malformation of these important outlets should be perfectly familiar to the Accoucheur. The muscles, vessels and nerves of the perineum are clearly represented and may be advantageously studied on this plate.

Laceration of the perineum is one of the untoward accidents that may occur during labour; the posterior commissure of the vulva is not unfrequently torn, and occasionally the perineum itself to a greater or less extent gives way, where the part is unyielding or when the head of the child is unusually large, or is so rapidly forced down as not to give time for adequate dilatation. The laceration may even extend to the rectum, so as to make that intestine and the vagina one canal. Manual support, however, properly afforded ought always to prevent such a calamity.

The labia are subject to enlargement from various causes, also to inflammation and abscess, to encysted and other tumours, to pudendal and inguinal hernia, and to simple œdema or sanguineous infiltration. Of the latter affection, occasionally ruptures and the loss of blood, which in one instance amounted to five pounds, leads to syncope that may prove fatal. More commonly the internal face of the labium (unless freely incised as Dr. D. practises) sloughs and the coagulum, which soon becomes offensive when exposed to the air, is thrown off by the suppurative process. The writer of these remarks, has witnessed one case where the woman with difficulty recovered from the excessive discharge and accompanying constitutional irritation. In his opinion, varices about the genital canal require further elucidation. Some of them exist only during the period of utero-gestation. He attends a lady who has borne seven children, in whom a swelling appeared at the right inguinal ring, about the seventh month of her first pregnancy. This was pronounced to be hernia, and a truss was actually applied by a surgeon, which was worn during the pregnancy and even during labour, but occasioned great distress. The tumour, however, is a varix and associated with a dilated and tortuous vein in the right labium, as large as the little finger. The inguinal and labial varices both disappear in the unimpregnated state, but regularly reappear about the middle of each pregnancy. The truss was discontinued during the fourth pregnancy with great relief, when the real nature of the swelling was clearly ascertained. In the two last confinements, the labial vein has been carefully emptied and kept compressed during the passage of the child's head through the vulva. Intercourse during the latter months of pregnancy causes much pain, which lasts a considerable time. The case of a female, Æt. 35, six months pregnant, who died suddenly from rupture of a vaginal varix, which took place during intercourse will be found extracted from Siebold's Journal in the Dublin Med. [illegible] 504, where two interesting cases of vaginal varices which burst during labour are also referred to. In [illegible] not stated.—J. S. S.

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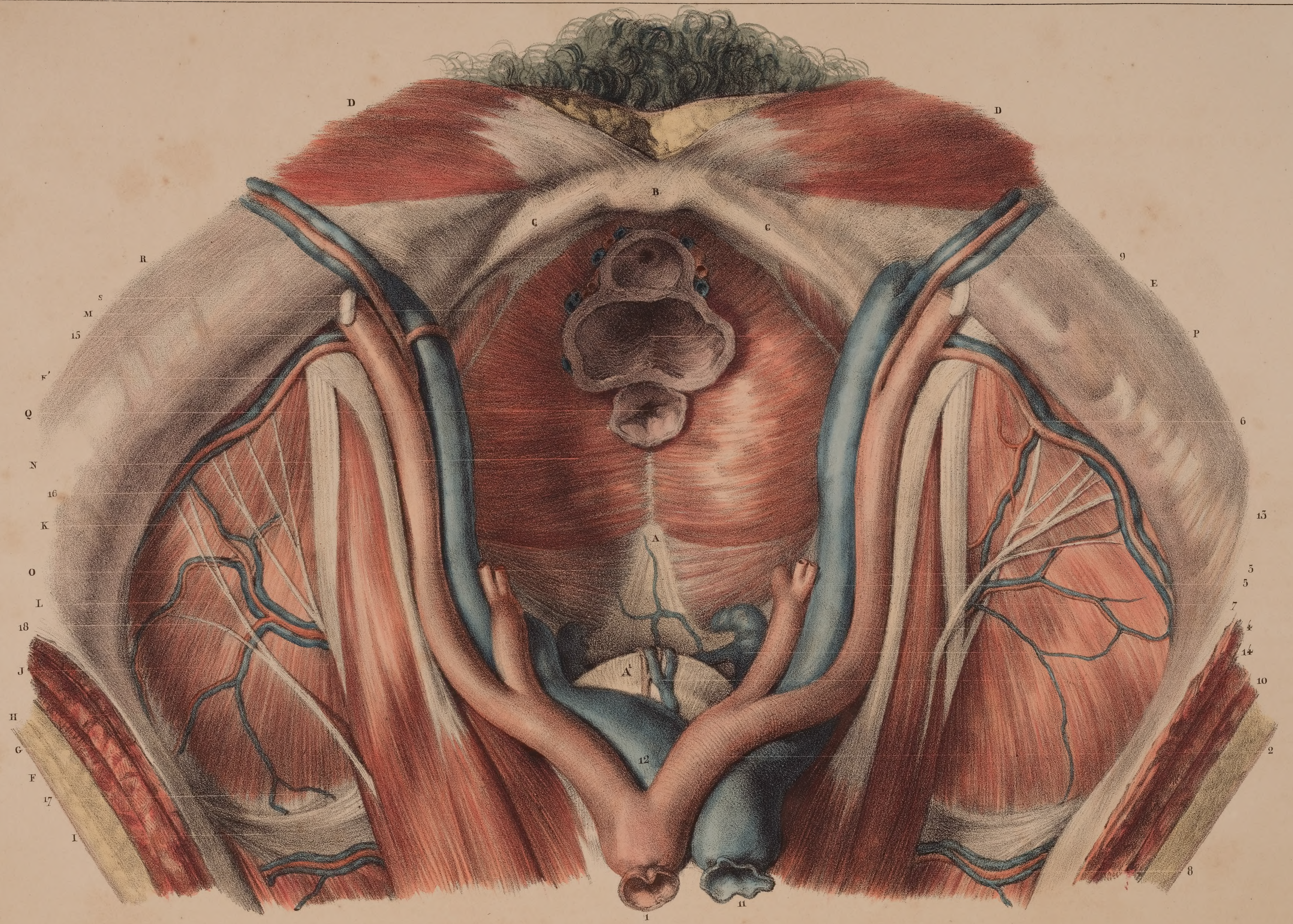

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PLATE XVII.

THIS PLATE REPRESENTS THE INTERIOR OF THE PELVIS OF AN ADULT FEMALE, COVERED BY THE SOFT PARTS, THE SUBJECT BEING ON ITS BACK; THE PERITONEUM AND THE APONEUROSES BENEATH IT HAVE BEEN REMOVED.

(FULL SIZE.)

A. Os coccygis.
A'. Promontory of the sacrum.
B. Pubis.
C, C. Bodies of the ossa pubis.
D, D. Recti abdominis muscles.
E, E. Abdominal parietes.
F. Obliquus externus abdominis.
G. Obliquus internus abdominis.
H. Transversalis abdominis.
I. Ilio-lumbar ligament.
J. Psoas magnus muscle.
K. Psoas parvus.
L. Iliacus internus.
M. Obturator internus.
N. Levator ani.
O. Coccygeus.
P. Orifice of the vagina.
Q. The rectum terminating at the anus.
R. Vesical orifice of the urethra.

S. Round ligament of the uterus cut through.

1. Aorta.
2. Common iliac artery of the right side.
3. External iliac artery.
4. Internal iliac artery.
5. Origin of the obturator and umbilical arteries.
6. Circumflexa ilii artery and vein.
7. Branches given off to the iliac fossa.
8. Inferior lumbar artery and vein.
9. Epigastric artery and vein.
10. Arteria sacra media and vein.
11. Vena cava inferior.
12. Common iliac vein of the left side.
13. External iliac vein.
14. Internal iliac vein of the right side.
15. Obturator artery, given off in this case from the epigastric.
16. Crural nerve.
17, 18. Musculo-cutaneous branches in the iliac fossa, given off from the crural plexus.

REMARKS.—To obtain an exact knowledge of the figure and dimensions of the pelvis in the living body, this part must be studied not only on the skeleton but also in connection with the soft parts, which it supports. By these its projections are cushioned and their sharpness taken off; by these, too, are its form and dimensions considerably modified. The shape of the brim, for instance, is altered by the psoæ muscles and the large iliac blood-vessels and nerves, so that the transverse diameter of the pelvis, measures about one inch less in the living and recent subject, than in the skeleton. The muscles and soft parts mentioned, do not, however, actually contract the brim to this extent during labour, as they yield in some degree to the uterine efforts, and the precaution should always be taken of relaxing them by directing the thighs to be bent on the pelvis.

The cavity of the pelvis, again, is encroached on behind, by the sacral plexuses, the hypogastric vessels, the pyramidal muscles and the rectum; in front by the bladder, the internal obturator muscles, vessels and nerves; laterally by a fatty cellular tissue, which gives passage to the vessels of the vagina and those of the uterus and its appendages.

The outlet of the pelvis, finally, is greatly modified by the musculo-membranous plane—the perineum, which closes the pelvis inferiorly, and in the median plane of which are placed the outlets of the urinary, genital and alimentary organs.—

J. S. S.

PLATE XVIII.

SECTION OF THE PELVIS OF AN ADULT FEMALE DIVIDED ANTERIORLY IN THE MESIAL LINE THROUGH THE SYMPHYSIS PUBIS, AND POSTERIORLY THROUGH THE LEFT SACRO-ILIAC SYNCHONDROSIS.

(FULL SIZE.)

A. Integuments of the abdomen.
B. Adipose tissue forming the mons veneris.
C. Labium majus.
D. Labium minus.
E. Clitoris.
F. Canal of the urethra.
G. Part of the vagina in the thickness of the perineum.
H. Anus and the part of the rectum that is situated in the thickness of the perineum.
I. Lesser sacro-sciatic ligament.
J. Round ligament of the uterus.
K. Articular surface of the pubic symphysis covered by fibro-cartilage.
L. Sacro-iliac articular surface.
M. Promontory of the sacrum.
N^{I}. Deep-seated portion of the anterior abdominal fascia.
N^{II}. Fascia of the transversalis.
O. Posterior surface of the rectus muscle.
P, P. Psoas muscle.
Q. Iliacus internus.
R. Obturator internus.
S. Fibres of origin of the pyriformis muscle.
T^{I}. Levator ani.
T^{II}. Part of the superior perineal aponeurosis stretching from the ischium to the pubis.
U. Coccygeus muscle.

1. Aorta.
2. Origin of the inferior mesenteric artery.
3. Right common iliac artery.
4. Right external iliac artery.
5. Circumflexa ilii artery and vein.
6. Epigastric artery and vein.
7. Internal iliac artery.
8. Gluteal artery.
9. Internal pudic artery.
10. Ischiatic artery.
11. Umbilical artery giving off the vesical arteries.
12. Uterine artery.
13. Obturator artery.
14. Middle hemorrhoidal artery.
15. Lateral sacral artery.
16. Arteria sacra media with its vein.
17. Vena cava inferior.
18. External iliac vein.
19. Internal iliac vein.
20. Ischiatic vein.
21. Gluteal vein.
22. Internal pudic veins.
23. Obturator vein.
24. Venous branches from the surrounding muscles.
25. Lateral sacral veins.

a. Superior musculo-cutaneous branch of the lumbar plexus of nerves.
b. Middle musculo-cutaneous branch of the lumbar plexus.
c. Inferior musculo-cutaneous branch of the lumbar plexus.
d. Crural nerve.
e. Sacral plexus.
e^{I}. Genito-crural branch of the lumbar plexus.
f, g. Third and fourth pairs of anterior sacral nerves, which go to form the sacral plexus.
h. Obturator nerve.

REMARKS.—The side view of the pelvis here given will readily suggest the mode in which the gravid uterus by its enlargement compresses the large vessels that supply and return the blood from the lower extremities. The obstacle which this pressure occasions to the return of blood gives rise to cramps and those œdematous and varicose states of the veins of the lower extremities which are so commonly met with in pregnant women. These varices of the leg, like those of the vulva, (vide Remarks under Pl. XVI), are not without danger. M. Moreau relates the case of a woman fifty years of age, otherwise healthy, who accidentally ruptured a varix of the left external saphæna vein, near the malleolus externus in the eighth month of her sixteenth pregnancy, and who fell a victim to the loss of blood which ensued within two hours and a half after the accident.—J. S. S.

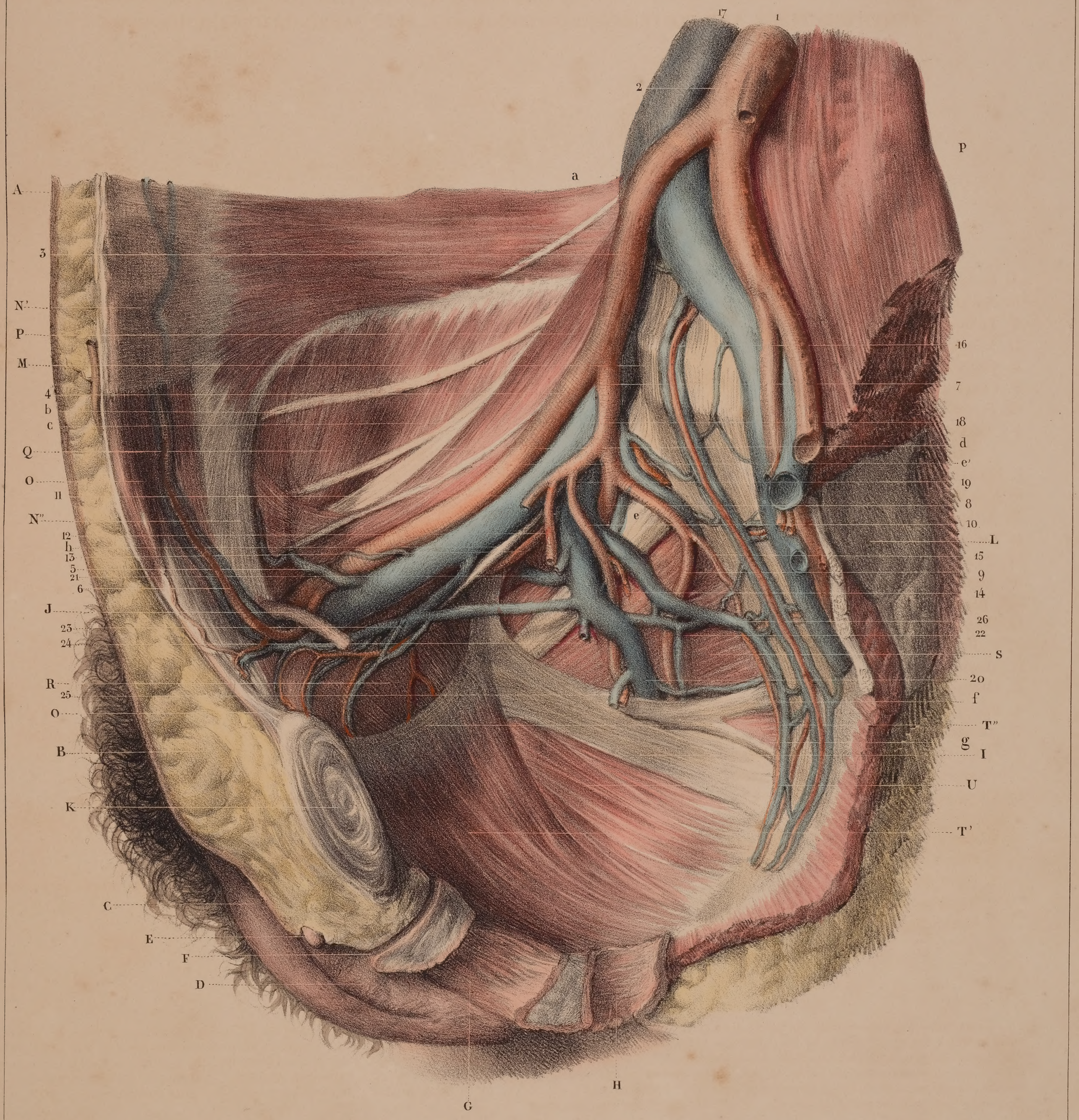

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PLATE XIX.

THIS PLATE REPRESENTS THE INTERIOR OF THE PELVIS OF AN ADULT FEMALE, WITH THE INCLUDED VISCERA: THE PERITONEUM HAS NOT BEEN REMOVED.

(FULL SIZE.)

A. Body of the uterus.
B. Ovary of the left side.
C. Right Fallopian tube.
D. Round ligament of the right side.
E. Fundus and posterior surface of the bladder.
F. Rectum.
G, G. Posterior surface of the abdominal parietes, reflected over the groin.
H, H. Section of that part of the peritoneum which fixes the left or descending colon.
I, I. Section of that part of the peritoneum which fixes the cœcum in the right iliac fossa.
J. Left iliacus internus muscle covered by its aponeurosis.
K. Obliquus externus abdominis muscle.
L. Obliquus internus abdominis muscle.
M. Transversalis abdominis muscle.

1. Aorta.
2. Vena cava inferior.
3. Inferior mesenteric artery.
4. Epigastric artery and vein of the left side, running beneath the peritoneum.
5. Right ovarian artery and vein seen through the peritoneum.
6. Right ureter, beneath the peritoneum.

REMARKS.—The enlargement of the uterus during pregnancy, from the situation of the organ between the bladder and rectum, often interferes with the functions of these viscera. Frequent micturition or retention of urine follows from the uterus compressing the bladder or urethra, and tenesmus or constipation ensues when it influences the rectum. There exists, moreover, a functional sympathy between these organs and the uterus, which is most important in a practical point of view. Medicines which unduly stimulate the large intestines or bladder, are liable to induce uterine actions. Stimulating diuretics and drastic purgatives, in consequence of this sympathy, are emmenagogues, and incautiously administered during pregnancy, they may lead to miscarriage or premature labour. Anodyne enemata and suppositaries, also act on the uterus in a most powerful manner.

The passage of the head of the child through the pelvis has occasionally been prevented by the impaction of indurated fœces in the rectum, and by the presence of a calculus in the bladder. Of the former Dr. Hamilton had seen three instances in which the patients died undelivered, (Oral Lectures, quoted in Dr. Reid's excellent Manual of Practical Midwifery, p. 74, London, 1836). Of the latter, Smellie has recorded one instance, and another which occurred at Liverpool, will be found in the Ed. Med. and Surg. Journ. Jan. 1829. The introduction of the catheter will clearly reveal the nature of the obstacle in this case. Where possible the calculus should be elevated above the brim, as has been done by Dubois; where it cannot be so raised, it should be extracted by operation; a successful instance of which is recorded by Planque, in Bibliothèque choisie de Médecine, tome 1, p. 84. The labour was completed by the natural efforts, two hours after the operation and the woman recovered completely in a month. In Smellie's case, the calculus was forced through the bladder by the labour pains, but the woman recovered, though with permanent incontinence of urine. In the Liverpool case, the nature of the obstructing cause seems to have been undetected; the woman was delivered by the perforator, but died the same evening. See Note IV of M. A. C. Danyau's translation of Naegele, on Distortion of the Pelvis.

A more frequent cause of retarded labour is the protrusion of the urinary bladder before the head of the fœtus, an accident, to which Mr. Christian has very ably drawn attention in the 9th vol. of the Ed. Med. and Surg. Journal, p. 281. The bladder may protrude as an elastic tumour under the arch of the pubis, occupying the anterior part of the vagina, or it may be forced down on one of the sides of the pelvic cavity. The remedy for protrusion of the urinary bladder, is the introduction of the catheter. Dr. Merriman has known it punctured with a fatal result, under the idea that it was the head of an hydrocephalic child. The possibility of this protrusion, should be borne in mind before puncturing the membranes, as it gives nearly the same sensation to the finger, as the bag of waters. The membrane of the vagina may, however, be traced covering it by careful exploration.—J. S. S.

PLATE XX.

SECTION OF THE PELVIS OF AN ADULT FEMALE; THE CUT PASSING, ANTERIORLY THROUGH THE SYMPHYSIS PUBIS, AND POSTERIORLY THROUGH THE LEFT SACRO-ILIAC SYNCHONDROSIS. THE BLADDER, VAGINA AND UTERUS ARE CUT THROUGH IN THE MEDIAN LINE: THE RECTUM IS DIVIDED AT ITS INFERIOR PART ONLY.

(FULL SIZE.)

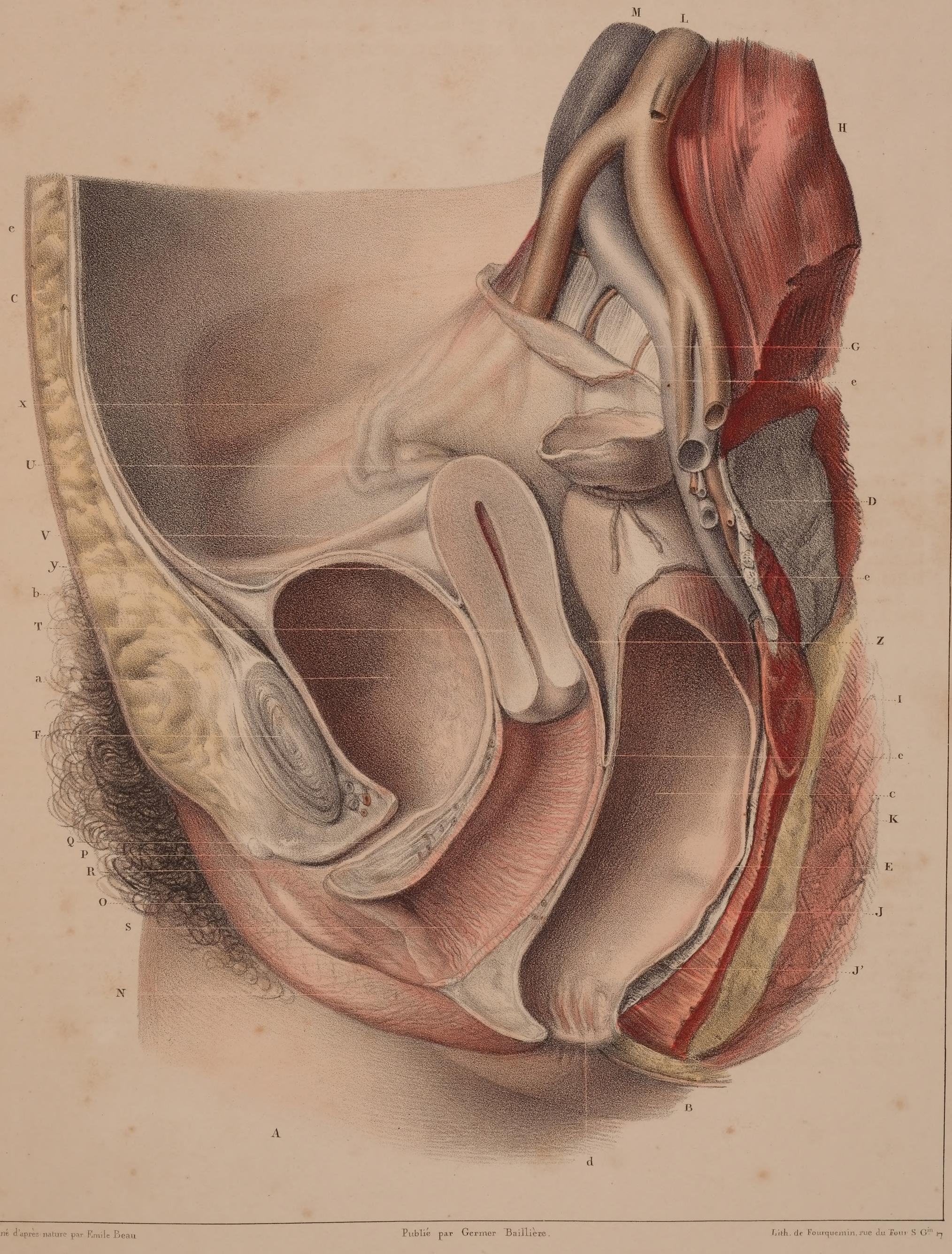
A. Top of the right thigh.
B. The right buttock.
C. Abdominal parietes.
D. Left sacro-iliac articulation.
E. The apex of the os coccygis pushing forward the posterior wall of the rectum.
F. Articular surface of the symphysis pubis.
G. Promontory of the sacrum.
H. Psoas muscle.
I. Pyriformis muscle.
J. Levator ani muscle.
J'. Superior perineal aponeurosis.
K. Gluteus maximus muscle.
L. Aorta.
M. Vena cava inferior.
N. Labium majus.
O. Labium minus.
P. Clitoris.
Q. Section of the canal of the urethra.
R. Spongy part of the vagina.
S. Rectum opened at the side.
T. Right half of the uterus.
U. Abdominal commencement of the Fallopian tube.
V. Round ligament of the uterus.
X. Ovarian vessels, beneath the peritoneum.
Y. Anterior pouch or cul-de-sac, formed by the peritoneum reflected between the bladder and the uterus.
Z. Posterior pouch or cul-de-sac, formed by the peritoneum reflected between the vagina and the rectum.

a. Left half of the bladder.
c. Rectum laid open at the side.
d. Anus.
e, e, e, e. Section of the peritoneum.

REMARKS.—In this plate, the mode in which the peritoneum invests the viscera of the pelvis is well seen, more particularly the pouch which it forms between the rectum and vagina into which the intestine descends in vaginal hernia. In this pouch diseased ovaria have often imbedded themselves so as to render delivery impracticable. Pregnancy complicated with tumour is less frequent, but infinitely more dangerous than pregnancy with narrow and deformed pelvis. Pregnancy, as Dr. Ashwell particularly observes, (Guy's Hospital Reports, vol. 1, p. 300) complicated with tumours of the uterus itself, of the ovary, or with those of a purely adventitious kind, growing either from the abdominal or pelvic cavities, gives rise to difficulties of the worst kind. The extent of the narrowing or deformity of the pelvis can generally be accurately ascertained, and if the assistance of the forceps or perforator be not too long delayed, a fortunate termination will in all probability be secured; where, however, tumours obstruct the birth of the child, the extent of the difficulty can rarely be correctly appreciated, and if the head overcomes the resistance and the uterus escape uninjured, the same assurance cannot be entertained of the morbid growth. The safety of the patient having such a tumour might have been only barely secured by a freedom from the commonest excitement whereby its natural supply of blood would have been perhaps diminished, but now this growth has not only shared in the sympathetic excitement of pregnancy, but has sustained severe pressure and contusion. The unfavorable termination in such cases is mainly referable to inflammation, softening and unhealthy suppuration in the tumours themselves. The grand means which we possess of escaping the imminent danger they offer, is to induce premature labour at the seventh month. By this procedure the mischievous changes likely to be produced in the tumour during the last months of gestation, and the greater dangers attendant on parturition are both evaded. In the absence of positive knowledge of the nature of such tumours, the best treatment consists in preserving them from excitement, pressure and contusion.

Mr. Henning in Med. and Phys. Journ. vol. 35, has shown that the lacume of the vagina may become obstructed and form tumours projecting into the vagina, as large as a hen's egg, and he conjectures that some of the causes recorded in Mr. Park's paper in vol. 2, Med. Chir. Trans. were of this description.

When the full term of pregnancy has been reached, the tumour felt in the vagina has sometimes been pushed back above the brim by pressure, so as to be out of the way, and when this was impossible it has been punctured or incised. Where solid and of large size, delivery has been accomplished by the perforator and hook. This last proceeding is, however, attended with such risk to the mother, that Dr. Merriman concludes the first of his two valuable papers, notwithstanding a previous remark, " that operations on any part connected with the uterus cannot be otherwise than dangerous during pregnancy and especially during labour," by observing that " upon the whole he is disposed to believe, where the tumour in the vagina occupies a large space, it would be more warrantable practice to remove it by excision if it consisted of a solid substance and certainly to puncture it if it contained fluid, rather than expose the child to certain death, and the mother to great hazard by employing the perforator."—Med. Chir. Trans. vol. 2. In a second paper in the tenth vol. of the same publication, this able obstetrician, says the evidence is in favour of puncturing these tumours.—J. S. S.



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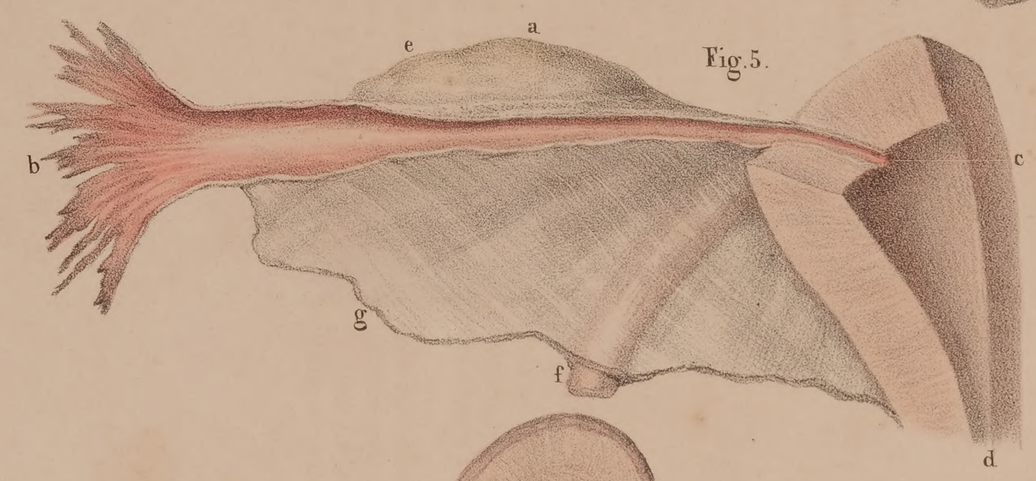

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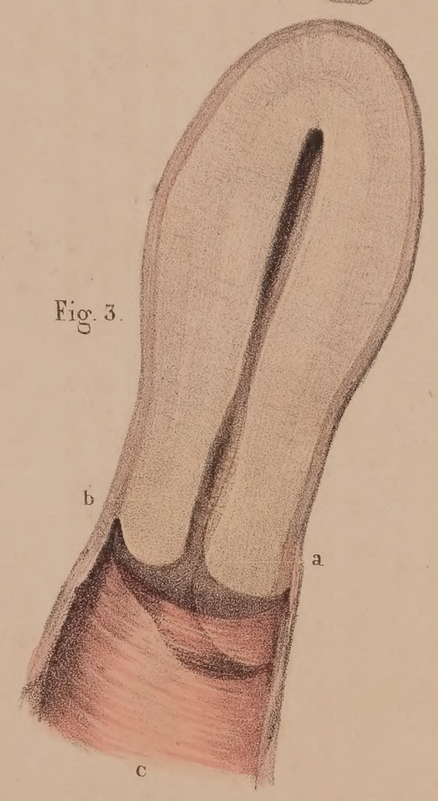

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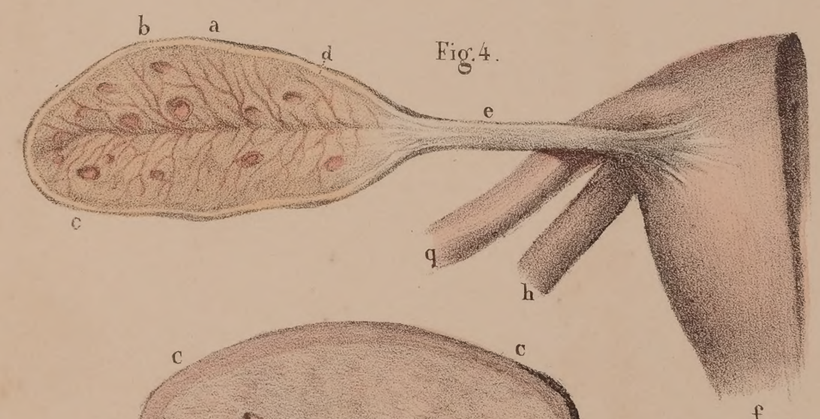

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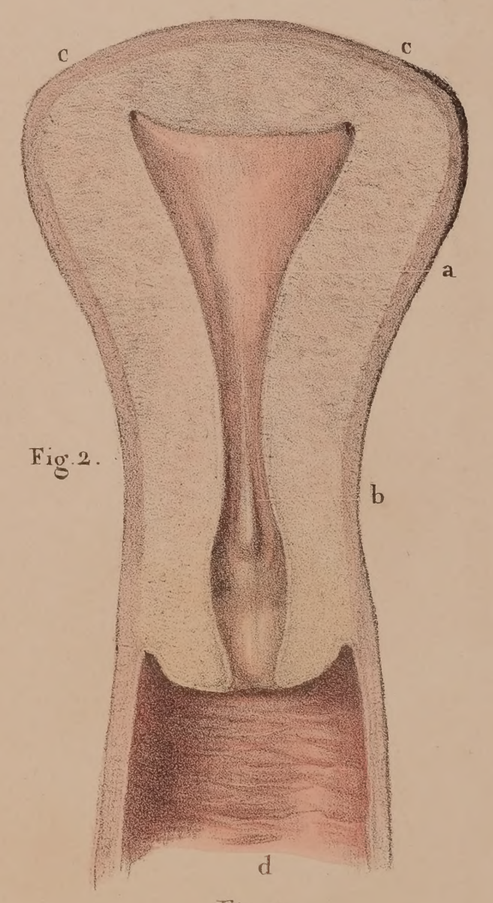

Fig. 2.

Fig. 2.

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PLATE XXI.

DIFFERENT SECTIONS OF THE INTERNAL GENITAL ORGANS OF AN ADULT FEMALE, TO EXHIBIT THE INTERNAL AND EXTERNAL ARRANGEMENT OF THEIR PARTS.

(FULL SIZE.)

Figure 1.—Represents the vagina, the uterus, and its appendages, in the normal state.

a. Labia majora.
b. Labia minora.
c. Commencement of the vagina.
d. Posterior raphe of the vagina: transverse rugæ of this canal.
e, e. Section of the vagina in the anterior raphe, in its whole extent.
f. Anterior surface of the body of the uterus.
g. Os uteri.
i. Ligaments of the ovary.
j. Fallopian tubes.
h. Ovary.
k. Fimbriated extremity of the right Fallopian tube, extended.
k'. Fimbriated extremity of the Fallopian tube of the left side grasping the ovary.
l. Round ligaments.
m, m. Anterior lamella of the broad ligament.
n, n. Posterior lamella of the same ligament.

Figure 2.—Represents the posterior half of the uterus.

a. Cavity of the body of the uterus.
b. Cavity of the cervix uteri.
d. Upper part of the vagina.
c, c. Orifices of the Fallopian tubes.

Figure 3.—Antero-posterior section of the uterus.

a. Anterior lip of the os uteri.
b. Posterior lip of the os uteri.
c. Vagina.

Figure 4.—Section of the ovary.

a. Ovary.
b. Fibrous partition dividing the substance of the organ into compartments.
c. Graafian vesicles in the stroma or substance of the ovary.
d. General fibrous investment from which proceed the internal septa of the ovary.
e. Ligament of the ovary.
f. Posterior surface of the uterus.
h. Round ligament cut off close to its origin.
q. Fallopian tube cut off close to its origin.

Figure 5.—Represents the canal of the Fallopian tube, laid open in its whole extent.

a. Canal of the tube with its external enlargement.
b. Expansion of the canal at the fimbriated extremity.
c. Narrow portion of the same canal, where it penetrates the substance of the uterus.
d. Left posterior section of the uterus.
e. Ovary.
f. Round ligament.
g. Beginning of the broad ligament.

Remarks.—The nature of the peculiar tissue of the vagina has not been exactly determined, but its characters approach those of fibrous tissue. It is dense, extremely dilatable and plentifully supplied with blood-vessels, which come from the internal iliac arteries. Towards the inferior part, the fibrous tissue is transformed into one of a spongy and erectile nature, which surrounds the orifice and has received the name of plexus retiformis.

The existence of an internal membrane in the body and fundus of the uterus has been doubted or absolutely denied by many excellent anatomists. M. Moreau, in an enquiry on this subject, observes that "if not altogether wanting, the modification it has undergone is so great that it resembles no other mucous membrane." He remarks that the serous and mucous tissues evidently communicate by the opening of the Fallopian tubes into the peritoneum, and asks at what precise point these tissues pass into each other. He finally considers it reasonable to regard the cavity of the uterus and the interior of the tubes as exuding surfaces, intermediate in position, organization, and use to the serous and mucous tissues, and believes that it is in their course that a gradual transformation takes place, without its being possible to fix upon the exact point of change of the one into the other. The analogies of comparative anatomy seem to favour the idea of the existence of a peculiar internal membrane of the uterus.

—J. S. S.

PLATE XXII.

UTERUS OF A FEMALE WHO DIED TWO DAYS AFTER HER CONFINEMENT, SHEWING THE FIBRES AND VESSELS ON THE EXTERNAL SURFACE OF THIS ORGAN.

(ONE THIRD THE NATURAL SIZE.)

Figure 1.—The anterior surface of the uterus; it is impossible to assign any uniform direction to the fibres which come into view when the external investing membrane is stripped off. Some fasciculi, however, which are pretty regular in their distribution are here shewn.

A. Round ligament.
B. Fallopian tube.
C. Circular fibres of the cervix decussating with the oblique fibres.
D. Fasciculus of fibres coming from the fundus of the uterus to assist in forming the round ligament.
E. Middle fasciculus going to the same point.
F. Inferior fasciculus running upwards to be reflected upon the posterior surface of the round ligament.
G. Peritoneum covering the fundus of the uterus, which cannot be separated from it without causing laceration of parts.

Figure 2.—Vessels of the anterior surface of the uterus, injected.

a. Trunk of the uterine artery.
a^{1} a^{11}. Trunks of the uterine veins.
b. Ovarian or spermatic artery.
c. Arterial and venous plexous distributed to the Fallopian tubes.
d. Artery and vein which follow these tubes in their course.
e. Arterial and venous plexus distributed to the ovary.
f. Artery and veins of the round ligament.
g. Large anastomotic branch between the veins of the two sides of the uterus.
h. Other venous anastomoses.
k, l. Arteries on the surface of the uterus.

Remarks.—The peculiar tissue of the uterus is described by most writers as essentially muscular, by others, however, it has been rather regarded as fibrous. It appears to consist of both these tissues, the muscular predominating towards the fundus, the fibro-elastic towards the os and cervix. Unless we admit this arrangement, many of the phenomena of gestation and labour are altogether anomalous and inexplicable. The uterus certainly possesses the essential characters of muscular tissue—a constitution of fibrine, obedience to stimuli, alternating periods of action and repose, &c., but it is also elastic in a high degree. The elastic property is owing to the presence of a greatly condensed cellular tissue which like similar tissues in other parts of the body—the ligamenta subflava, middle coats of arteries, &c., possesses a high degree of elasticity, and always contains fibrine and occasionally muscular fibre. This peculiar fibrous tissue then forms a principal element of the uterus, and pervades every part of its structure. It is the elastic property of the cervix and os tineæ, and not any sphincter muscle which supports the contents of the womb during pregnancy, and the resistance of which must be overcome during labour by the muscles of the fundus. The pain in the first stage of labour most probably arises from the comparatively sudden distention of this fibro elastic tissue and not from the contraction of the muscular fibres. The pain seems to be seated about the orifice and neck, and not in the body of the uterus, whose natural contractions are not more painful than those of the muscles of the abdomen, bladder and rectum.

Fig. 2.—The vascular system of the uterus merits the closest study of the accoucheur, in consequence of the hæmorrhage to which this organ is subject on the separation of the placenta, and from the not unfrequent occurrence of uterine and crural phlebitis. The veins are destitute of valves and communicate so freely with each other as to present some resemblance to erectile or cavernous tissue. This readily explains the danger of the erect position immediately after delivery and before the uterine sinuses (Pl. 23, fig. 1) are securely closed by the muscular and elastic contraction of the uterus and the formation of coagula within their open orifices. As the ovarian arteries supply the part of the uterus where the placenta usually adheres, compression of the aorta which is only practicable below the origin of these arteries, though recommended by high authority can exert no other influence in stopping uterine hæmorrhage than by rousing the uterus itself to efficient contraction.—J. S. S.

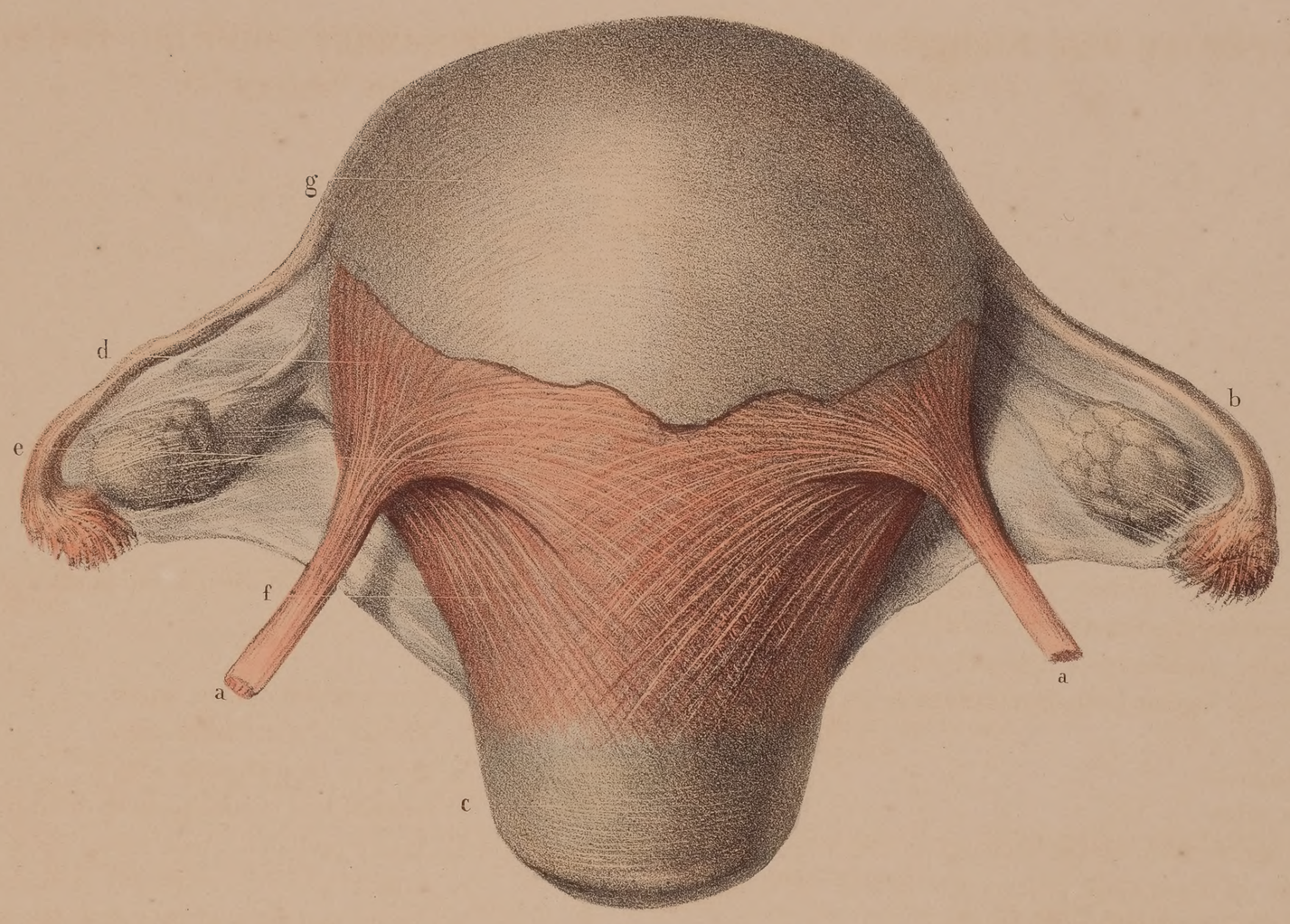

Fig. 1.

Fig. 2.

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Fig. 2.

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PLATE XXIII.

UTERUS OF A FEMALE WHO DIED FORTY-EIGHT HOURS AFTER DELIVERY, SHOWING THE VASCULAR STRUCTURE OF THE INTERNAL SURFACE OF THIS ORGAN, AND THE OPEN MOUTHS OF THE VESSELS.

(HALF SIZE.)

Figure 1.—This figure represents the uterus laid open by an incision through the median line of the body; the edges are drawn considerably apart, so as to show the internal surface of the uterus. The injection has rendered conspicuous the numerous sinuses that pierce the whole of the internal surface of the uterus except that of the cervix.

Figure 2.—The internal and lateral surface of the same uterus. The direction of the internal plane of fibres has here been attempted to be shewn; these are evidently circular at the cervix and round the orifice of the Fallopian tube.

Remarks.—The muscular structure of the gravid uterus has been described by some writers as an inextricable mass of fibre in which it is impossible to find any distinct arrangement, while others have classed the fibres according to their direction into longitudinal and circular. On the exterior (Pl. 22, fig. 1) the fibres converge from the fundus in a fan shape towards the round ligaments to which the office of tendons is assigned, to the posterior ligaments whose office may be similar, and also to the ligaments of the ovaries and tubes, so that they become lateral muscles having the round and posterior ligaments as the fixed points of action. On the internal surface, the fibres are arranged at the upper part concentrically around the openings of the tubes in successively increasing circles (Fig. 2, Pl. 23) till they intersect each other. At the inferior part they surround the body of the uterus and are gradually lost as they descend to the os uteri. Between the external and internal layers, intermediate ones are described by Boivin, (Mémorial de l'Art des Accouchemens, Paris, 1836, p. 60, &c.), but with the exception of the above described layer, the uterus does certainly present an inextricable mass of fibres which cross and interlace with each other as in the heart and tongue in every conceivable direction. The uterus has thus a clear provision for the expulsion of its contents, the external layers draw the uterus towards the brim of the pelvis and maintain the fundus in the direction of the axis, whilst the whole power of the fundus by the arrangement of the internal fibres is concentrated on the centre of the os uteri. The intricate arrangement of the intermediate fibres confers every variety of movement required, and powerfully compresses the open mouths of the uterine sinuses and utero-placental veins after the placenta is separated. Indeed, as Sir C. Bell observes, the uterus is to be regarded as an organ destined for the safe delivery of the secundines more peculiarly than for the reception and growth of the ovum. Although its system of vessels be admirably adapted for an increase of action and for rapid growth, yet it is not so peculiar in these respects as in its muscular structure. Where the fœtus lodges in the ovarium, it grows within the term of gestation to its full size; but if it reach the tube and there remain to undergo development, the woman dies of hæmorrhage, the tube bursting and the blood flowing without being restrained by any system of muscular fibres, capable of constringing the blood-vessels which are necessarily ruptured.—J. S. S.

PLATE XXIV.

LYMPHATIC VESSELS OF THE UTERUS AND ITS APPENDAGES INJECTED, IN A FEMALE WHO DIED A SHORT TIME AFTER DELIVERY.

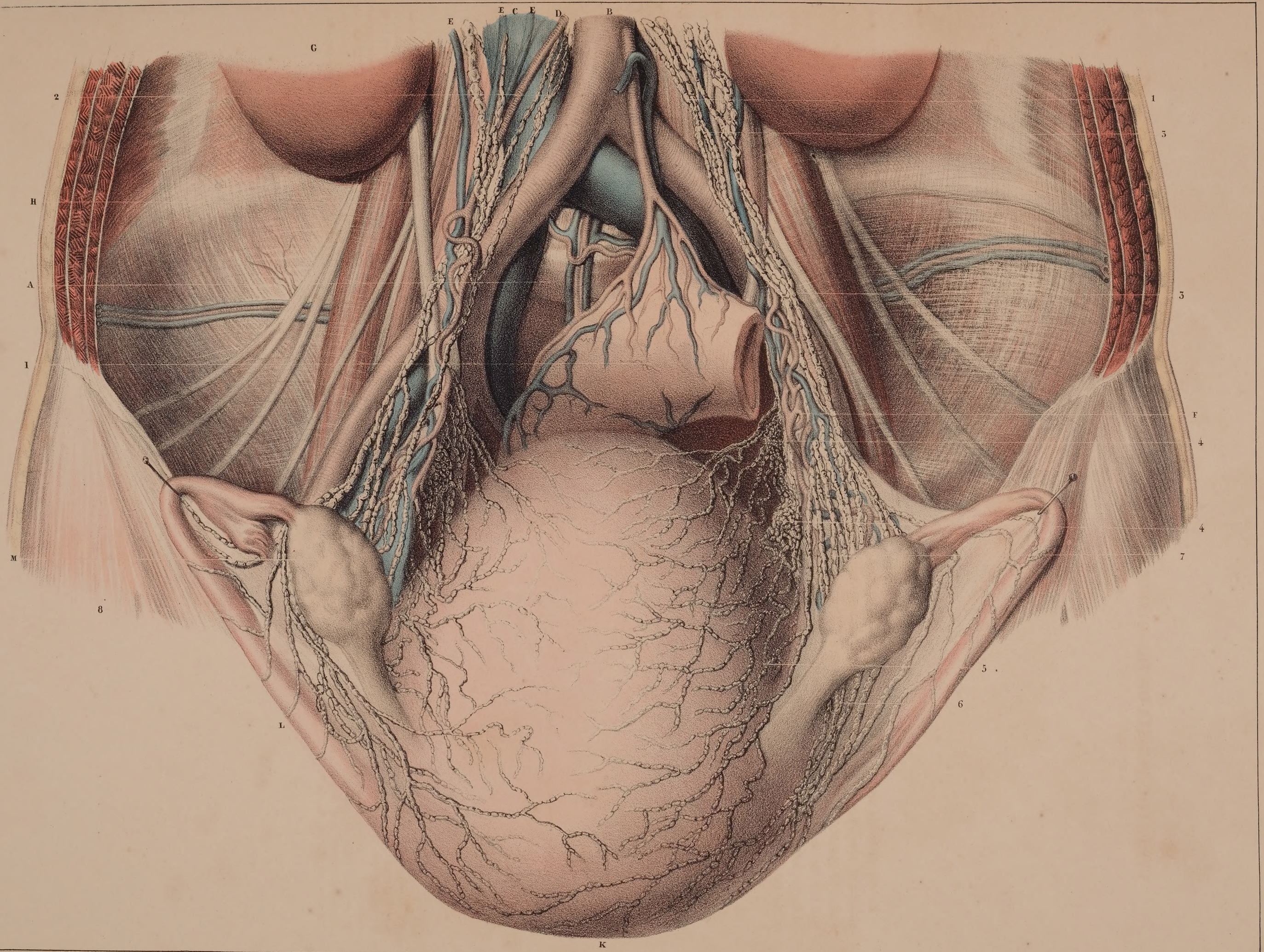
(FULL SIZE.)

In this plate are seen the lymphatics which arise from the posterior surface of the uterus, from the Fallopian tubes and from the ovaries, and their course through the broad ligaments. The pubis is removed, and the uterus drawn downwards and forward, so as to show the whole of its posterior surface. The peritoneum covering the posterior surface of the cavity of the abdomen is also removed.

A. Promontory of the sacrum.
B. Aorta, at its bifurcation.
C. Inferior vena cava, with its divisions.
D. Ovarian artery.
E E E. Ovarian veins.
F. Ovarian artery and vein, before they reach the broad ligament; these vessels are very tortuous and much subdivided.
G. Inferior half of the kidneys.
H. Ureter.
J. Rectum.
K. Posterior surface of the uterus.
L. Fallopian tube.
M. Ovary.

1. Four trunks of lymphatic vessels coming from the uterus and its appendages, prior to their reaching the lymphatic glands which are situated on a level with the kidneys, in front and by the side of the aorta and vena cava.
2. Subdivision of one of these trunks before entering the lymphatic gland.
3, 3. Anastomoses of the vessels along their course.
4, 4. Lymphatic ganglia or glands of the pelvis situated on the hypogastric vessels, which receive the lymphatics coming from the posterior part of the cervix uteri.
5. Origin of numerous lymphatics, from the posterior surface of the uterus; they first run to the broad ligaments, and from thence they form trunks which go to the renal lymphatic ganglia.
6. Branches which arise from the fundus of the uterus and take the same course as the preceding.
7. Lymphatic trunks which arise from the anterior surface of the uterus.
8. Lymphatic vessels coming from the Fallopian tubes.

Remarks.—Cruikshank observes that in the pregnant state, the trunks of the hypogastric absorbents are as large as a goose quill and the vessels themselves so numerous that when they alone are injected with mercury, we might be led to believe that the womb was solely composed of a mass of absorbents. The researches of Tonnelle and Dupley prove "that inflammation of the absorbents of the uterus, of the receptaculum chyli and thoracic duct occurs not unfrequently in puerperal women, and that this disease gives rise to the same constitutional disturbance as uterine phlebitis. It appears, indeed, that these varieties of uterine inflammation are frequently combined, and it is probable that in both, the purulent fluid which is formed, is conveyed by the absorbents and veins into the mass of circulating blood. The local symptoms of this affection are often so obscure as to escape detection during life, while the constitutional symptoms which sometimes resemble, in a striking manner, the effects produced by specific poisons are so virulent as not to yield to any remedies, however early and vigorously employed. (Vide R. Lee's Researches on the Pathology and Treatment of some of the most important Diseases of Women, p. 47, 1833).—J. S. S.



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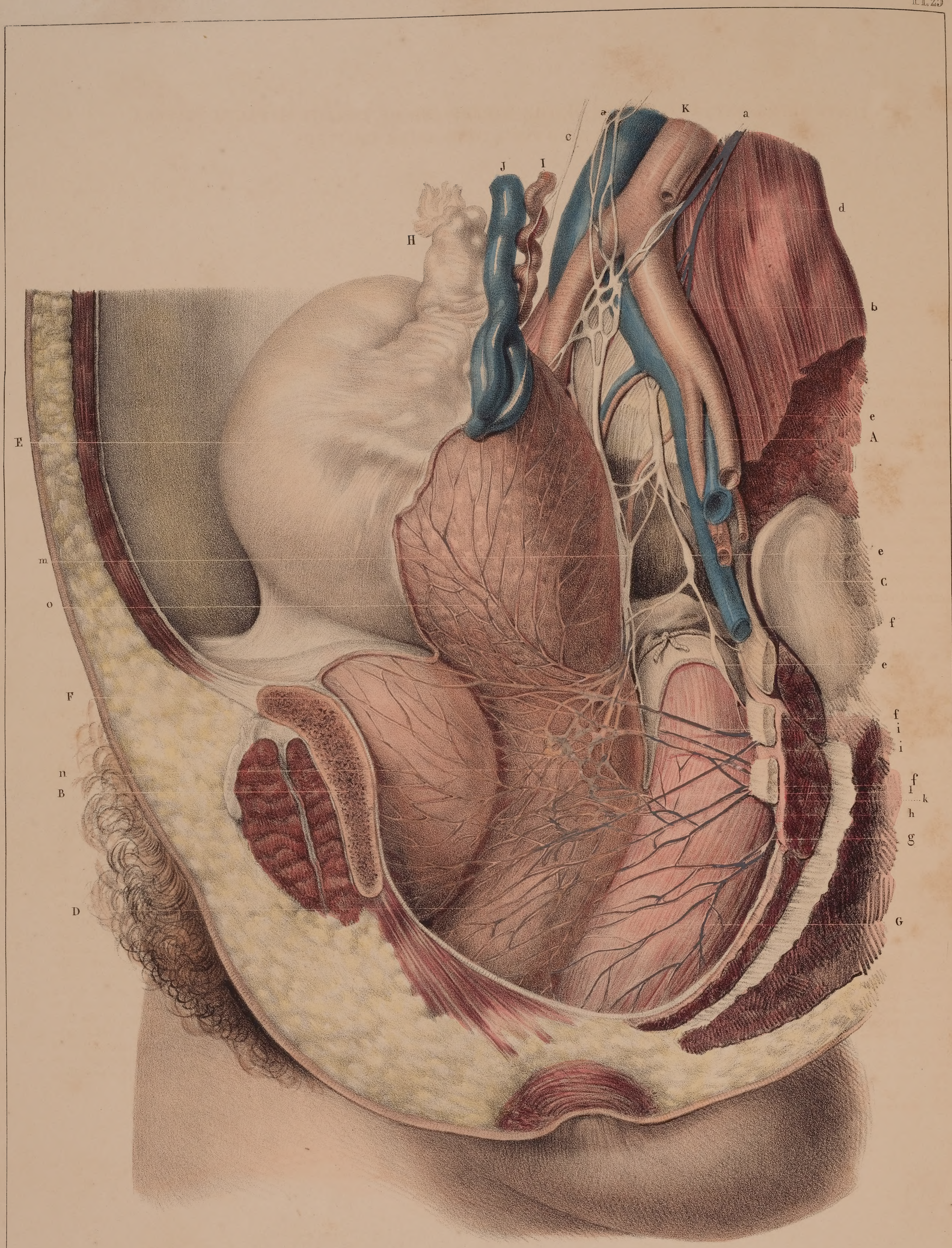

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PLATE XXV.

THIS PLATE REPRESENTS THE NERVES OF THE UTERUS AND OF THE OTHER PELVIC VISCERA, IN A FEMALE WHO DIED FOUR DAYS AFTER DELIVERY.

(FULL SIZE.)

A. Promontory of the sacrum.
B. Section of the horizontal ramus of the pubis external to the symphysis.
C. Sacro-iliac synchondrosis.
D. Vagina.
E. Uterus.
F. Bladder.
G. Rectum.
I. Left ovarian artery.
J. Ovarian vein of the same side.
H. Ovary and fimbricated extremity of the Fallopian tube.
K. Aorta and vena cava.

a, a. Right and left lumbar splanchnic nerves running inwards and in front of the aorta.
b. Plexus formed by the anastomosis of the two trunks just mentioned.
c. Ovarian plexus of nerves, which is formed by branches from the renal plexus, giving off branches to the ovary and uterus; thus establishing a direct communication between the latter and the kidneys. This direct nervous communication satisfactorily explains the pain in the renal and lumbar regions so much complained of during parturition in some cases.
d. Communicating branch between the lumbar and sacral ganglia.
e, e, e. Sacral ganglia.
f, f, f. Origins of the sciatic nerve.
g. Fourth sacral branch giving off twigs to the hypogastric plexus and to the pelvic viscera.
i. Vesico-uterine branch given off from the sacral plexus.
j. Vesico-vaginal branch of the sacral plexus.
h. Branch of the sacral plexus going to be distributed to the bladder, the vagina, and the uterus.
k. Vaginal branch.
l. Communications between the sacral branches and the hypogastric plexus.
m. Plexiform trunk of the great sympathetic nerve which descends into the pelvis, and in its passage, receives filaments from the sacral ganglia, to form the hypogastric plexus; which ramifies on the surface of the uterus, the vagina, and the rectum.
n. Hypogastric plexus.
o. Nerves from the hypogastric plexus, that ascend to the uterus.

Remarks.—The cutaneous and muscular branches of the spinal nerves, which are distributed to the lower extremities merit some attention in an obstetrical point of view, as their functions are often disturbed during pregnancy and parturition. When the gravid uterus sinks down into the pelvis, the irritation and pressure of the cutaneous and anterior crural nerve cause pain and numbness on the fore and outer part of the thigh; when the head is passing through the brim, the obturator nerve suffers compression, and cramp is produced on the inner side of the thigh. As the head advances through the cavity, the sciatic nerve is compressed and cramp occurs at the back part of the thigh, the calf of the leg and sole of the foot. Occasionally, indeed, this nerve suffers so much injury as to cause temporary lameness or even partial paralysis.

The special nerves of the uterus are furnished by the renal and hypogastric plexuses of the great sympathetic, and by branches from the sacral nerves of the cerebro-spinal system. Many of these are faithfully represented in this plate; but the researches and elaborate dissections of Dr. R. Lee have demonstrated, both in the gravid and unimpregnated state, the existence of numerous plexuses situated immediately under the peritoneum, both on the anterior and posterior surface of the uterus and of two large ganglia situated one on either side of its cervix. From these ganglia, branches which assume the meshy and intricate arrangement of the ganglionic system rather than the arborescent one of the voluntary nerves, surround and pass up along with the uterine branches of the hypogastric vessels, and are distributed either to the peritoneum or finally lost in the substance of the uterus itself. The freest anastomotic communication exists between the nerves from the different sources. The zealous enquirer just named views these nerves as "a great system which enlarges with the parietes, blood-vessels and absorbents of the uterus during pregnancy, and which returns after parturition to its original condition, such as it was before conception took place," (Vide Anatomy of the Nerves of the Uterus, with two plates, by Dr. R. Lee, fol. London, Baillière, 1841.) The Editor has much pleasure in stating that after the most careful examination of Dr. Lee's preparations, he is fully satisfied of the accuracy of the anatomical views in the work quoted, and he can vouch for the great fidelity of the representations there given.—J. S. S.

PLATE XXVI.

MALFORMATIONS OF THE UTERUS AND VAGINA.

Figure 1. (Half-size copy from a drawing by M. Chazal).—Bifid, bilobed or double uterus. The vagina was originally divided into two along its whole length by a central septum; but of this septum there remains only a narrow band and a double cicatrix produced by its rupture during the act of parturition. The woman, from whose body the preparation was taken, of which the plate is a copy, had conceived alternately first in the one and then in the other half of the uterus, and died after her second labour from the effects of peritonitis, which at the time of her second confinement prevailed epidemically in the Maison d'Accouchement in Paris.

Figure 2. (Full size).—Uterus natural, but the vagina double in the greater part of its extent.

A. Incomplete septum of the vagina, having at its superior part a smooth enlargement at the distance of half an inch from the cervix uteri. The septum on each side, presents all the characters of a mucous membrane.

Remarks.—Otto remarks, that the division of an organ usually single, into two parts, is improperly viewed as a proper duplication of the organ, the appearance being really the effect of arrested development. Such an anomalous formation is frequently seen in the human uterus, which then presents itself divided into two horns, as among the lower animals. Meckel also refers all deviations from natural formation of this kind to an arrest of development, in consequence of which the uterine organs manifest during the whole of life, some of the conditions peculiar to the embryonic state. Various irregularities in the conformation of the human uterus and vagina, tending in most instances to duplication, have been met with in infants and adults, but in every one of these apparent duplications, only one ovarium and one Fallopian tube have been found appended to each division of the uterus. The following deviations have been described or figured: 1. The uterus and vagina presenting the usual external form, but separated internally into two cavities by a septum running in the median line, (Boivin, Traité pratique des Maladies de l'Uterus.) 2. The fundus and body of the uterus divided into two cornua, while the cervix, os uteri, and vagina remained normal, (Dr. R. Lee, Med. Chir. Trans. vol. 17.) 3. The uterus bifid as above with a septum also dividing the cervix and vagina, and presenting two cervico-uterine orifices, (Fig. 1). 4. The bifid uterus terminating by a double os uteri in a single vagina, (Purcell, Phil. Trans. vol. 64, p. 474, the parts are preserved in the Museum of the Royal College of Surgeons, the right cornu still containing a full grown fœtus). 5. The uterus bifurcated with two utero-vaginal orifices and a double vagina, (Pole, Memoirs of the Medical Society of London, vol. iv, p. 221). 6. One division of the bifid uterus opening into the vagina, the other into the rectum, (Valisneri). 7. The uterus with a double neck, the one opening into a vagina communicating with the rectum, the other opening into a vagina communicating with the urethra, (Saviard and Duverney, Recueil d'Observations Chirurgicales, Paris, 1784, Observation 94, p. 312). 8. A single uterus with a double vagina, (Fig. 2). 9. The left ovary and tube, and the left half of the uterus entirely wanting. It is worthy of remark that in this case the woman had given birth to several children of opposite sexes, (Chaussier, Bulletins de la Faculté, tome v, p. 436). 10. The uterus opening into the rectum in consequence of deficiency of the vagina, and occasioning delivery to take place through the anus, (Barbeau, Cours d'Accouchemens, tome 1, p. 39, Paris, 1778). 11. Imperfect development or entire absence of the uterus, the vagina existing, (Lancet, 1836—7, vol. 1, p. 613). 12. Occlusion of the vagina from congenital malformation, or imperforate state of the hymen, obstructing the catamenia and requiring surgical operation at puberty. If an aperture exists in the hymen, the catamenia can escape conception; has in many such instances occurred, and the persistent hymen has obstructed parturition. The Editor has himself met with one case which required incision before the child could pass. In the cases of bifid uterus, pregnancy has occurred sometimes in the one, and sometimes in the other division of the uterus; fig. 1, is an interesting example of this. Dr. Geiss has recorded an instance of double uterus, which occurred in Germany, where there was double pregnancy, and both infants lived. The mother has since been pregnant with one child, (Journal hebdomadaire de Medicine, 1829, tome 2, p. 310).

The duplication of these parts may occasion certain cases of superfœtation, and doubts as to the existence of pregnancy according as the finger has been introduced into one vagina or the other. It has also produced rupture of the uterus, (Ramsbotham, Midwifery, Part 1, p. 407).

The absence of the uterus, necessarily leads to amenorrhœa and sterility, and may become important in a medico-legal point of view. The congenital obstruction or defect of communication between the uterus and vagina, where the catamenia accumulate in the body of the uterus, requires simple incision or in some instances the gravest operations to preserve life.—J. S. S.

Fig. 1.

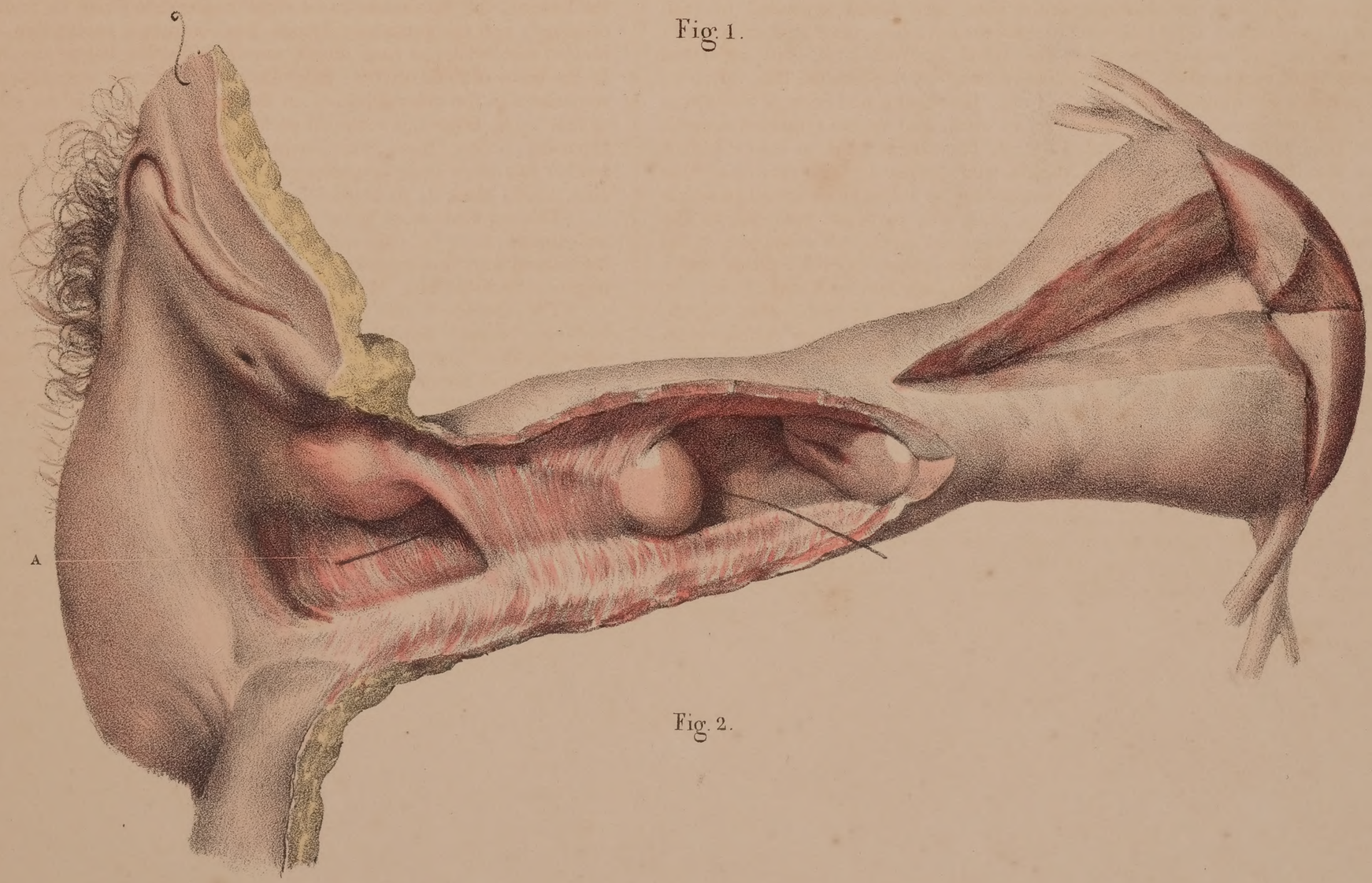

Fig. 2.

Dessiné d'après nature par Emile Beau.

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Lith. de Fourquemin, r. du Four. 17.

Fig. 8.

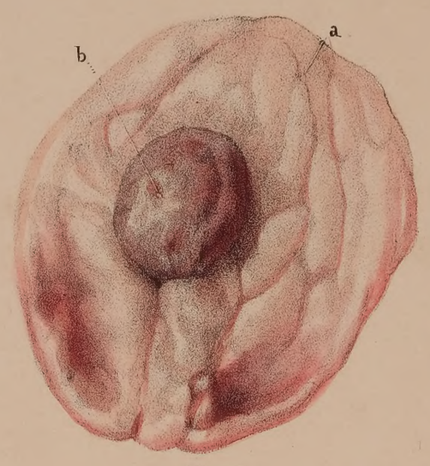

Fig. 1.

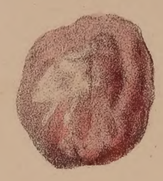

Fig. 2.

Fig. 3.

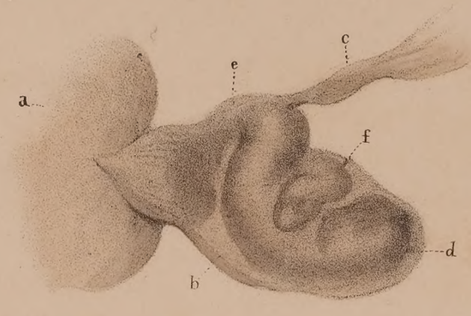

Fig. 4.

Fig. 5.

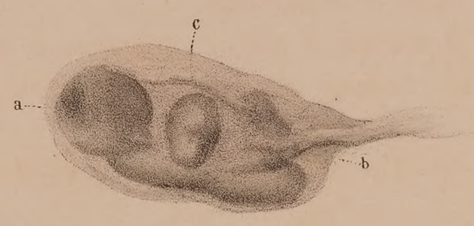

Fig. 6.

Fig. 7.

Fig. 9.

Fig. 11.

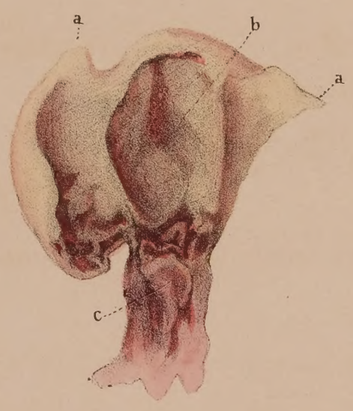

Fig. 10.

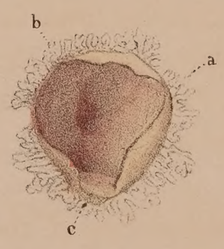

Fig. 12.

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Lith. de Fourquemin.

PLATE XXVII.

THIS PLATE REPRESENTS TWO HUMAN OVA, THAT WERE EXPELLED FROM THE UTERUS IN THE EARLIER PERIOD AFTER CONCEPTION.

(FULL SIZE.)

Figure 1.—Entire ovum, surrounded by the deciduous membrane; it was expelled from the uterus, four weeks, as supposed, after conception. The female, from whom it came had the catamenia upon her on the 19th December 1835; the discharge lasted till the 25th of the same month. She might have conceived on the 26th. The ovum was expelled on the 5th February, 1836.

a. Deciduous membrane of the uterus spread out and seen on its free surface.
b. Ovum.

Figure 2.—Same ovum, without the decidua vera, but still covered by the decidua reflexa, through which the rudiments of the embryo may be seen.

Figure 3.—The same ovum, seen under the microscope, freed from the decidua reflexa and the shaggy envelope of the chorion. The embryo may be seen through the chorion, bent upon itself, and covered by the amnion.

Figure 4.—Same ovum, seen under the microscope and having its diameter magnified seven times, or having forty-nine times the natural surface. The chorion has been here removed and the embryo is contained within the amnion.

a. Chorion cut through and reflected.
b. Amnion.
c. Membranous portion which seems to be the remains of the umbilical vesicle.
d. Cephalic extremity of the embryo.
e. Pelvic extremity towards which run the vessels which are afterwards to assist in forming the umbilical cord.
f. Mass of intestines which project at the anterior part of the embryo.

Figure 5.—Dorsal surface of the same embryo magnified to the same extent.

a. Cephalic extremity.
b. Pelvic extremity.
c. Vertebral column.

Figure 6.—Anterior surface of the same embryo seen under the microscope.

a. Cephalic extremity.
b. Pelvic extremity to which are attached the rudiments of the umbilical cord.
c. Mass of intestines.

Figure 7.—Left lateral view of the same embryo taken out of the amnion, as seen under the microscope.

a. Cephalic extremity.
b. Pelvic extremity, to which are attached the rudiments of the umbilical cord.
c. Mass of intestines.
d. A species of tail or prolongation seemingly formed by the protrusion of the intestinal canal.

Figure 8.—The same embryo, seen by the naked eye.

Figure 9.—Another ovulum expelled four weeks, as supposed, after conception, represented as it appeared when expelled.

Figure 10.—Same ovum; the decidua has been here divided, so as to show the cavity of this membrane.

a. Part of the decidua vera.
b. Decidua reflexa.
c. Abnormal prolongation which descended into the cervix uteri.

Figure 11.—Same ovum completely separated from the decidua, and shewing the villi of the chorion.

Figure 12.—Same ovum divided longitudinally, having a smooth cavity filled with a limpid serum, and shewing no traces of the embryo.

a. Chorion.
b. Villi of the chorion.
c. Amnion.

Remarks.—The ova represented in this and the succeeding plates are certainly abnormal in many respects. The Editor has so recently considered the anatomy of the ovum, in chapter II of his Practical Observations on Abortion, (London, 1840), that it seems needless to repeat his views here. He has arranged the causes of abortion into three great classes: 1st. An abnormal formation of the ovum, which may occur either in the fœtus or its membranes: or in the decidua and placenta, those structures which fasten the ovum to the uterus, and finally connect the embryonic and maternal systems. 2nd. Morbid states, functional or organic of the uterus and its appendages. 3. Morbid states, generally of the constitution of the mother. He has attempted to point out the disadvantages of the indiscriminate employment of opiates in the preventive treatment of miscarriage, to fix the proper indications for the use of the ergot of rye, with a view to control the hæmorrhage necessarily attending abortion, and has finally insisted on the practical advantage of fixing the exact cause of miscarriage, by careful examination of the aborted ovum in every instance. The knowledge of the cause is of the highest value in directing the after treatment of the patient and determining what precautions are necessary for preventing a recurrence of miscarriage in the next pregnancy.—J. S. S.

PLATE XXVIII.

THIS PLATE REPRESENTS THREE ABORTIVE OVA, EXPELLED BEFORE THE LAPSE OF THE THIRD MONTH FROM CONCEPTION.

(FULL SIZE.)

Figure 1.—Exterior of an aborted ovum of about nine weeks. The decidua is torn and partly reflected so as to shew the decidua reflexa, which is thin and opaque.

a. External and rugous surface of the decidua, where it was separated from the uterus.
b. External surface of a small portion of the placenta.
c, c, c, c. Internal sieve-like aspect of the decidua vera, which in the earlier periods of pregnancy does not adhere to the decidua reflexa.
d, d. Lacerated edge of the decidua, which, when it was entire, adhered to the edge *e, e* of the same membrane.
f. Decidua reflexa extended over the chorion.
g, g. Angle, at the edge of the placenta, where the internal layer of the decidua is reflected over the chorion, very nearly in the same manner as is the internal layer of the pericardium over the external surface of the heart.
h. Inferior part of the reflexa, which was in contact with the cervix of the uterus.

Figure 2.—Vertical section of the same ovum.

a. Section of the placenta, which is supposed to have adhered to the superior and posterior part of the uterus.
b, b. Section of the anterior part of the decidua.
c, c. Section of the posterior part of the decidua.
d. Inferior part of the decidua, which was in contact with the cervix of the uterus.
e, e. Cavity of the amnion, in which the fœtus is suspended to the internal surface of the placenta, by a very delicate umbilical cord.
f. Section of the three membranes, viz. the amnion, the chorion, and the decidua reflexa, which are not only contiguous, but adherent to each other.
g, g. Angle formed by the placenta, at the spot where the internal layer of the decidua is reflected over the chorion.
h. Here the three membranes approach each other pretty closely, and their respective situation, as regards the placenta, is seen.

Note. These two plates and their explanation have been copied from the thirty-third table of Hunter's *Anatomia uteri humani gravidi tabulis illustrata, Londini,* 1774, 1 *vol. folio.*

Figure 3.—Abortive ovum of about five weeks, opened so as to shew the cavity of the decidua, the membrane of the ovum, the cavity of the amnion, and the fœtus contained within it.

a, a, a, a. External surface of the decidua.
b, b, b. Edge of the decidua, which when it was perfect, adhered to the section *e, e, e.*
c, c, c. Internal surface of the decidua.
d. Part of the decidua, which corresponded to the cervix uteri.
f, f, f, f. Flaps composed of the several membranes of the ovum, and produced by a crucial incision made for the purpose of bringing the embryo into view.
g. Part of the decidua reflexa, seen on its smooth or internal surface.
h. External or adherent surface of the decidua reflexa, separated from the chorion.
i. Chorion.
k, k, k. Amnion.
l. Space, which exists between the chorion and the amnion, and which is filled with fluid, or rather a reticulated tissue like the hyaloid membrane of the eye.
m. Cavity of the amnion.
n. Embryo.
o. Hernia of the intestines at the base of the umbilical cord.

Figure 4.—Aborted ovum of about six weeks, completely separated from the decidua.

a. Decidua reflexa.
b, b, b. Inequalities produced by the laceration made in separating the decidua from the points where it was reflected over the ovum.
c, c. Small portion of the external surface of the placenta.

Figure 5.—Same ovum, in which the decidua reflexa has been divided by a crucial incision.

a, a, a, a. Flaps formed by the decidua reflexa being dissected off the chorion.
b. Chorion and amnion through which the embryo is indistinctly seen.

Figure 6.—Same ovum, completely laid open.

a, a, a, a. Flaps of the decidua reflexa.
b, b, b, b. Flaps of the chorion.
c, c. Amnion.
d. Embryo.
e, e. Umbilical vesicle, with its prolongation, situated between the amnion and the chorion.
f. Fold of the amnion enveloping the umbilical vessels.
g. Hernial enlargement at the base of the umbilical cord.

Fig. 1.

Fig. 2.

Fig. 3.

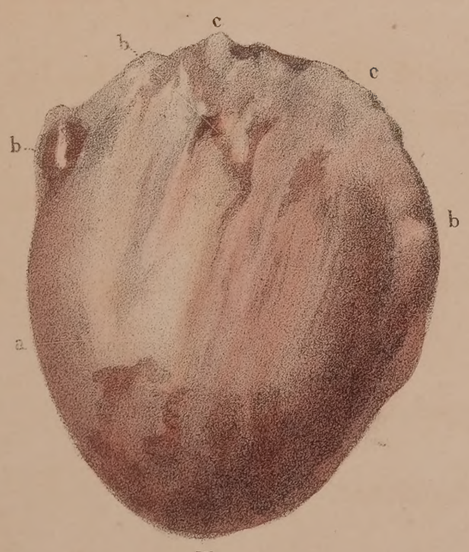
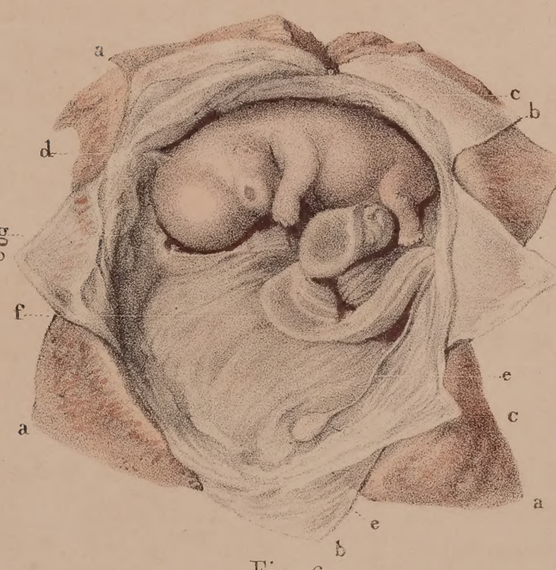


Fig. 4.



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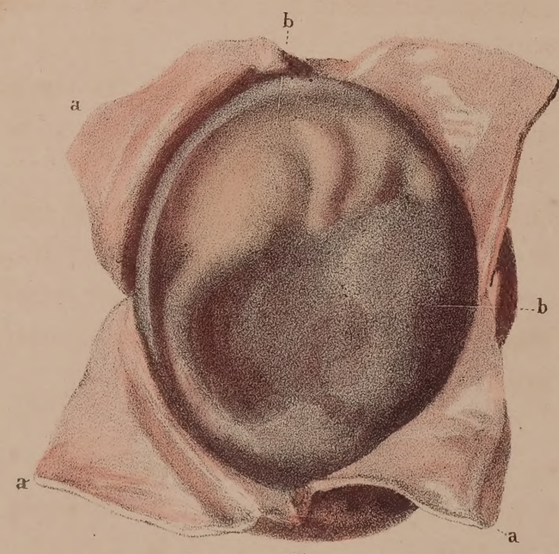

Fig. 5.

Dessiné d'après nature par Emile Beau.

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Fig. 6.

Fig. 5.

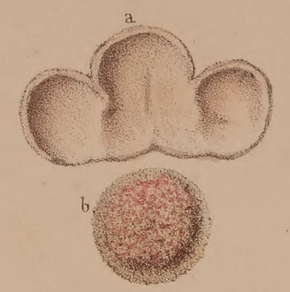

Fig. 3.

Fig. 2.

Fig. 1.

Fig. 4.

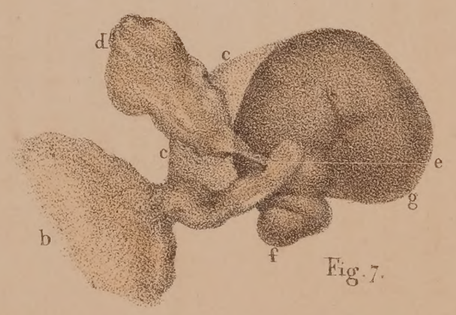

Fig. 7.

Fig. 8.

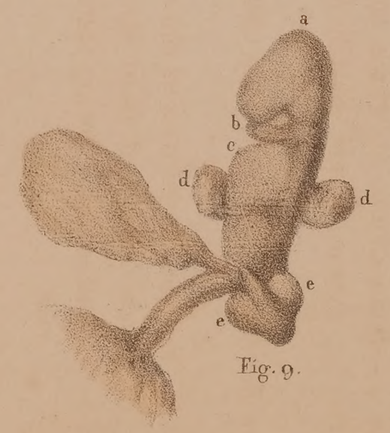

Fig. 9.

Fig. 10.

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PLATE XXIX.

THIS PLATE REPRESENTS: 1ST. A MUCH MORE PERFECT OVUM THAN THE ONE IN PLATE XXVII.
2ND. A FŒTUS OF ABOUT THREE MONTHS, WITH ITS APPENDAGES.

The female from whom the ovum which is represented under different aspects in the first ten figures, was expelled, had the catamenia present on the 17th of March, 1838. The discharge lasted till the 24th. She might have conceived on the 27th or 28th. She was a good deal fatigued by a journey on the 27th of April, 1838. She again suffered fatigue on the 30th. On the 1st of May, there was a slight discharge of blood from the vulva, which was followed by the expulsion of this ovum, on the morning of the 4th of May, notwithstanding the absolute rest, that had been enjoined.

Figure 1.—Ovum of the natural size, and seen precisely as it appeared when it was expelled.

Figure 2.—Same ovum, in which the division of the external membrane, allows the villi of the chorion to be seen.

Figure 3.—Same ovum separated entirely from its external membrane.

a. External membrane of the ovum spread out.
b. Ovum separated from its external membrane by a sort of enucleation, showing the surface of the chorion, covered by villi.

Figure 4.—Villi of the chorion, having the appearance of hydatids, under the microscope.

Figure 5.—The same ovum laid open at the edge of the placenta. The chorion has been spread out and the fluid it contained allowed to escape. The embryo is enveloped in the amnion, and at its lower part near the pelvic extremity. The umbilical vesicle is seen, resembling a sack or bag containing fluid. The sack in which the embryo is contained, as well as that of the umbilical vesicle, adhere to the chorion by filaments invisible to the naked eye, but which made a slight resistance where those parts were detached.

a. External and villous surface of the chorion.
b. Internal and smooth surface of the chorion.
c. Amnion containing the embryo.
d. Umbilical vesicle.
e. Point where the amnion and chorion adhere, giving some traces of the umbilical cord.

Figure 6.—Same ovum, examined from a different point of view. The sack which contains the embryo has been raised, and detached from its connexions with the chorion. The rudiments of the cord may be distinctly seen uniting with the contracted part of the umbilical vesicle, to pierce the amnion and enter the body of the embryo.

a. External and villous surface of the chorion.
b. Internal and smooth surface of the chorion, seen at the point where the vessels of the umbilical cord ramify.
c. Amnion containing the embryo.
d. Umbilical vesicle.
e. Umbilical vessels.
f. Pelvic extremity of the embryo, of a triangular form.

Figure 7.—Same ovum magnified seven diameters.

b. Part of the chorion inverted, shewing its internal surface.
c. Amnion containing the embryo.
d. Umbilical vesicle.
e. Point of junction of the umbilical vessels and the umbilical vesicle.
f. Pelvic extremity of the embryo.
g. Cephalic extremity.

Figure 8.—Same embryo, seen under the microscope, taken out of the amnion, and laid on its left side.

b. Remains of the chorion.
c. Amnion, which has been divided over the anterior surface of the embryo and has been reflected over its dorsum.
d. Umbilical vesicle.
e. Point of junction of the umbilical vessels, the umbilical vesicle and the amnion.
f. Species of hook formed by the sacrum and coccyx at the pelvic extremity.
g. Cephalic extremity of the embryo.
h. Mass of intestines.

Figure 9.—Same embryo lying on its back, as seen under the microscope.

a. Cephalic extremity.
b. Confused mass of viscera, situated below the head, probably rudiments of the thoracic viscera.
c. Mass of other viscera.
d, d. Two distinct lateral appendages, which adhere to the body of the embryo at about its middle. The nature of the lateral appendages has not been determined, as they have not been sufficiently examined, but they are probably the superior extremities.
e. Iliac enlargements at the pelvic extremity.

Figure 10.—Same embryo, lying on its right side, and seen under the microscope. The transparency of the tissues permits the following objects to be seen:

a. Transverse striæ indicating the rudiments of the vertebræ.
b. Aorta filled with blood.
c. Another large vessel, supposed to be either the inferior vena cava or the vena portæ. At the pelvic portion, this vessel was parallel to the aorta, but soon leaves it, and is lost amongst the viscera, going either to the liver, or proceeding with the umbilical vessels.
d. Rudiments of the umbilical cord.
e. Mass of viscera.
f. Mass of viscera which seems to be composed of the liver.
g. Another mass of viscera which seem to be the heart and thoracic viscera.

Figure 11.—Fœtus of about three months, (natural size).

A. Umbilical cord in which the vessels still run parallel to one another.
B. Fœtal surface of the placenta.

REMARKS.—Much difficulty exists in accurately determining the age of aborted ova. Neither the last appearance of the catamenia, nor the size of the embryo is perfectly conclusive of the period of conception. It is well known to practical accoucheurs that many females have periodical sanguineous discharges, one, two or three times after having conceived. And as the size of the fœtus at the full term varies in weight from five to fifteen pounds and even more, so does the same relative difference in size prevail at the earlier periods of fœtal life. This happens not only in the fœtuses of different women, but is observed generally in cases of twin conception. Many proofs of this might be adduced from the records of supposed instances of superfœtation, but the Editor is acquainted with none more conclusive than a case of twins prematurely expelled between the fifth and sixth month, which lately occurred under his own observation. Both fœtuses exhibited unquestionable signs of life at birth, the one weighing ten ounces and a half (avoirdupois), the other twenty-one and a half ounces. Each fœtus possessed a separate amnion, but both were enclosed in a common chorion, proving their simultaneous conception. The difference of size was owing to an imperfect development of the common placenta at that extremity, to which the smaller fœtus was attached, (Reports of the Westminster Medical Society's Papers and Discussions, Lancet 1840—41, vol. 1, p. 415—447). M. Moreau has perhaps assigned rather too early an age to the ova which he has figured.

The whole subject of development, human and comparative, will be found very clearly stated and extensively illustrated in the "Elements of Physiology for the use of Students, and with especial reference to the wants of Practitioners," translated from the German with additions, by R. Willis, M.D. Part the First, on Generation and Development. London, 1841.—J. S. S.

PLATE XXX.

THIS PLATE REPRESENTS THE UTERUS WITH THE APPENDAGES OF THE FŒTUS ADHERING TO IT.

(HALF SIZE.)

A red injection has been thrown into the arteries, and a blue injection into the veins, of the mother. These injections penetrated into the structure of the placenta, but did not get into the vessels of the cord; the latter have therefore been injected separately, the vein with white, and the arteries with yellow injection.

The placenta is here partly detached and reflected on itself, shewing the numerous utero-deciduous arteries.

A, A. Section of the walls of the body of the uterus.

A^{1}, A^{1}. Section of the walls of the cervix uteri.

B. Surface of the uterus that corresponds with the detached part of the placenta.

C. Uterine surface of the placenta detached and reflected.

D. Umbilical cord. (B is erroneously printed instead of D at the cut extremity of the cord. J. S. S.)

E. Knot on the umbilical cord.

F, F. Chorion still covered by the decidua reflexa.

G. Section of the amnion on the fœtal surface of the placenta.

H. Part of the decidua separated and reflected.

H^{1}. Part of the decidua still adhering to the uterus.

H^{11}. Blood-vessels developed in the substance of the decidua. By slight pressure, the blood in these vessels may be made to move, and on opening them their canals may be distinguished.

I, I. A kind of circular sinus which was filled by the blue injection thrown into the veins of the mother. The sinus was only perfect for about one third of the circumference of the placenta, the injection penetrated no further than this, but the *unknown* has here been presumed from the *known*, the sinus has been represented as surrounding the whole circumference of the placenta. The continuance of the vessel, however, beyond the third of the circle filled by the injection is to be regarded as a mere supposition.*

I^{1}, I^{1}. Part of the sinus, laid open.

I^{11}, I^{11}. Corresponding portion of the same sinus, seen on the edge of the placenta.

J, J. Other sinuses which anastomose with the circular sinus after running about an inch through the decidua and substance of the uterus.

K, K, K, K. Utero-deciduary arteries distended by the injection thrown into the arteries of the mother. They are remarkable for their large size, number and tortuous course. They run for about the distance of an inch, between the uterus and placenta, and then enter the uterine surface of the latter. They penetrate the lobes to about the depth of a line or two, and then suddenly terminate, without diminishing in size or subdividing in any appreciable manner.

L, L. Sinuses situated behind the placenta, running a course of several lines in length between the uterus and placenta, and having no walls except the temporary membrane interposed between these two organs.

L^{1}, L^{1}. Prolongation of the sinuses towards the internal aspect of the placenta, and completion of the walls of these singular venous canals.

* Of the existence of this sinus the Editor has no doubt from a careful examination of many recent placentæ. Its extent, however, requires further investigation. At present it is doubtful whether or not, the sinus extends around more than about half the circumference of the placenta.—J. S. S.

Remarks.—This plate faithfully represents the arterial and venous connection between the uterus and placenta, and merits the most careful study. The tortuous course and abrupt termination of the utero-placental arteries were represented by Dr. W. Hunter, and the terminal sinus of the placenta and its free communication with the venous system of the uterus by three or four apertures as figured in this beautiful plate may be seen in a preparation of the late Dr. Sweatman, now in the Museum of the Middlesex Hospital, as well as in that of M. Blandin here represented. This utero-placental venous arrangement has been generally altogether overlooked, and the existence of any vascular communication between the uterus and placenta denied by many observers. Its unquestionable existence, however, proves that there is not only a fœtal, but also a maternal portion in the human placenta, which is thrown off along with the fœtal portion at birth.

To accomplish the separation of an organ having such free vascular connections as the placenta, with safety to the parent, a uterus is required—an organ possessing a great degree of elasticity, and that complete and complex arrangement of elastic and muscular fibres for closing the mouths of the torn vessels which has been alluded to in former remarks. The absolute necessity for this free vascular connection between the ovum and the parent will be fully recognized when the placenta comes to be generally regarded as the primordial lung as well as stomach of the fœtus. The placenta is in fact not only a nutritive organ but the analogue of the allantois in the ovum of the bird, a complex branchial or respiratory organ operating the same changes on the fœtal blood through the sanguineous medium of the proper uterine circulation, as the gills of aquatic animals produce on their circulating blood through the watery medium in which they live. This is proved by all the analogies of comparative anatomy, by the frequent occurrence of asphyxia of the fœtus in footling cases after a very few minutes compression of the umbilical cord, and by the recent observation of tufted branchial-like processes in the fœtal portion of the placenta which freely float in the uterine sinuses, (Dr. J. Reid, Ed. Med. and Surg. Journ. Jan. 1841). The law which declares the contact of oxygen with the circulating medium, indispensably necessary for the continuance of life, is so loudly proclaimed through the whole of the organic creation, that adequate provision for its accomplishment under all circumstances, during the term of intra-uterine as well as of extra-uterine life must be inferred, and as the structure of no other part of the ovum presents the conditions necessary for the performance of the oxygenizing function, it may be safely held to be situated in the placenta. Comparative anatomy shows that the blood-vessels of the mother are in no instance continuous with those of her offspring; but in all there is provision made for extensive approximation of fœtal and maternal vessels. Four modes at least are known to exist equally favouring the law of endosmose and exosmose, by which the blood of the fœtus is brought under the organizing influence of that of the mother: 1st. by simple apposition of the surfaces of the ovum and uterus, as in the mare and sow. The 2nd is found in all ruminating animals and many other quadrupeds, and consists in a division of the inner surface of the uterus into cells, in which prolongations, named cotyledons, that pass from the surface of the ovum are received; the vessels of the uterine cells and those of the cotyledons are in close proximity, but only loosely conjoined, a layer of milky-looking fluid being interposed between them, so that they readily separate from each other at the birth of the offspring without laceration. The 3rd exists in the carnivora and many of the rodentia; here the vessels of the uterine and fœtal portions of the placenta are intimately blended and interwoven without the intervention of any chylous looking fluid, and the delicate maternal vessels are torn through, separated from the uterus, and thrown off along with the secundines, at the birth of the fœtus. The 4th is found in the human subject, where the uterine veins lose their external tunic, and in the placenta possess only their delicate inner coat; the placenta is pierced like a sponge by the transmitted vessels of the uterus, (the tortuous arteries of Hunter) and the maternal blood circulates freely in a cellular tissue round the tufted vessels of the embryonic portion of the placenta. After which the blood finds its way into the terminal sinus of the placenta, and is returned to the maternal system by the decidual venous apertures represented in this plate.

It is only when the placenta is regarded as an organ of respiration, that the necessity for expediting the birth of the head in footling cases the moment the circulation in the cord is suspended, and the expediency of instantaneously performing the Cæsarian section, when the parent has suddenly expired, will be fully felt.—J. S. S.

Pl. 30.

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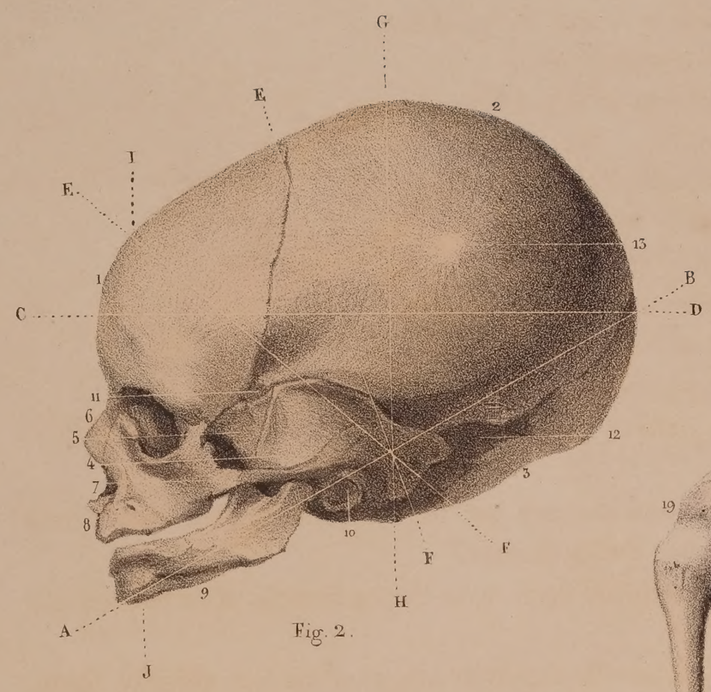
dessiné d'après nature par Emile Beau par Emile Beau.

Lith de Fourquenin.



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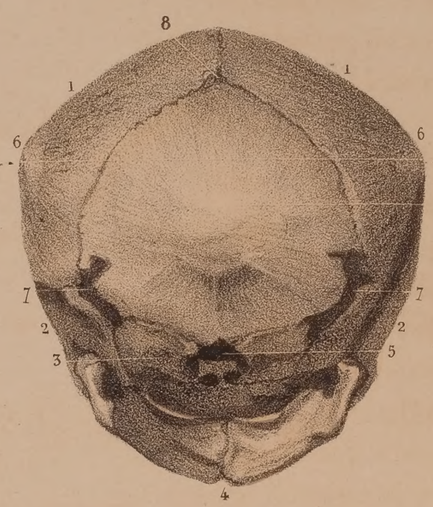

Fig. 3.

Fig. 4.

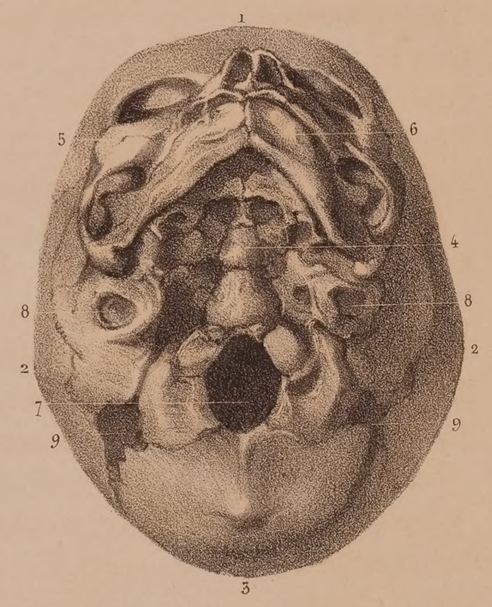

Fig. 5

Fig. 1.

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Lith. de Fourquemin.

PLATE XXXI.

SKELETON OF A FŒTUS AT THE FULL TIME: THE HEAD IS REPRESENTED IN DIFFERENT POSITIONS SO AS TO SHEW ITS FONTANELLES, SUTURES, AND VARIOUS REGIONS.

(HALF SIZE.)

Figure 1.—Skeleton of a fœtus at the full time.

1. Anterior fontanelle.
2. Frontal protuberance.
3. Parietal protuberance.
4. The ala major of the sphenoid bone.
5. Orbits.
6. Ossa nasi.
7. Septum nasi
8. Malar bone.
9. Superior maxillary bone.
10. Inferior maxillary bone.
11. Cervical vertebræ.
12. Twelfth dorsal vertebra.

From 12 to 13. Five lumbar vertebræ.

14. Vertebræ forming the sacrum,—false vertebræ.
15. Os coccygis.
16. Points of ossification of the sternum.
17. Cartilaginous part of the sternum.
18. Cartilages of the true ribs.
18.[1] Cartilages of the false ribs.

From 19 to 20. The seven true ribs.

From 20 to 21. The five false ribs.

21. Last or floating rib.
22. Clavicles.
22[1]. Under or thoracic surface, of the scapula.
23. Articulation of the humerus with the scapula.
24. Osseous part of the body of the humerus.
25. Elbow joint.
26. Body of the radius already ossified.
27. Body of the ulna in the osseous state; the extremities of the bone are cartilaginous.
28. Double row of the bones of the carpus, in the state of cartilage.

From 29 to 30. Metacarpal bones.

31 to 32. First phalanges.

33 to 34. Second phalanges.

35 to 35.[1] Third phalanges.

36. Ossa ilii.
37. Pubis in the state of cartilage.
38. Hip joint.
39. Body of the femur, terminating by its two cartilaginous epiphyses.
40. Knee joint.
41. Body of the tibia, having its extremities cartilaginous.
42. Fibula, with cartilaginous extremities.
43. Bones of the tarsus, still in the state of cartilage.

44, 45. Middle of the five metatarsal bones, in the osseous state.

46, 47. Bodies of the first phalanges, in the osseous state.

48, 49. Bodies of the second phalanges.

50, 50[1]. Last phalanges.

Figure 2.—Lateral view of the head of a fœtus at the full time, stripped of the soft parts.

1. Left half of the os frontis.
2. Left parietal bone.
3. Left half of the occipital bone.
4. Left temporal bone.
5. Ala major of the sphenoid bone.
6. Os nasi.
7. Left molar bone.
8. Superior maxillary bone.
9. Inferior maxillary bone.
10. Meatus auditorius externus.
11. Left anterior lateral fontanelle.
12. Left posterior lateral fontanelle.
13. Left parietal protuberance.

A, B. Diameter from the occiput to the chin, a little more than five inches and a quarter.

C, D. Diameter from the occiput to the os frontis, four inches and a half.

E, F. Diameter from the foramen magnum to the anterior fontanelle, nearly three inches and three quarters.

G, H. Vertical diameter, three inches and a half.

I, J. Diameter from the frontal bone to the chin, nearly three inches and three quarters.

Figure 3.—Posterior view of the same head.

1, 1. Two parietal bones.
2, 2. Posterior part of the two temporal bones.
3. Condyles of the occipital bone.
4. Inferior maxillary bone.
5. Foramen magnum occipitale.
6, 6. Parietal protuberances.
7, 7. Posterior lateral fontanelles.
8. Lambdoidal suture.

A, B. Transverse diameter, three inches and a half.

Figure 4.—View of the top of the same head.

1, 1. Double part of the frontal bone.
2, 2. Parietal bones.
3. Superior angle of the occipital bone.
4. Anterior fontanelle.
5, 5. Sagittal suture.
6. Posterior fontanelle.

A, B. Transverse diameter.

Figure 5.—Base of the same head.

1. Frontal bone.
2, 2. Parietal bones.
3. Occipital bone.
4. Body of the sphenoid bone.
5. Malar bone.
6. Inferior maxillary bone.
7. Foramen magnum occipitale.
8, 8. Meatus auditorius externus of either side.
9, 9. Posterior and inferior lateral fontanelles.

REMARKS.—The fœtal skeleton and the peculiarities of its osseous system are here delineated, but more especially those parts which obstetrically considered deserve attention, and which from their size are apt to impede the second stage of labour. The dimensions of the head and the provision which nature has made for its compression in the open fontanelles and sutures, are separately represented. The fontanelles and sutures should be carefully studied, and the sense of touch familiarized with their shape and mutual relations, as the only available means of distinguishing the head, as the presenting part of the child, and of ascertaining its exact position before it enters, and during its passage through the pelvis. The lozenge shape of the anterior fontanelle, with its greater prolongation in the direction of the frontal suture, is distinctly seen in fig. 4, and should be carefully contrasted with the narrow triangular form of the posterior fontanelle; the posterior fontanelle at the full term only consists of a kind of triangle formed by the meeting of the lambdoidal and sagittal sutures, a triangle in which the occipital bone glides under the parietals during compression of the head. This disposition M. Moreau dwells upon and states that it alone is sufficient in practice, for distinguishing the occipital extremity of the head from the frontal even in those rare cases in which the occipital bone is divided in the median line by a suture.

The following table of the approximative measurements of the fœtal head at various ages has been constructed by M. Figuera.

AGE OF FŒTUS.	BIPARIETAL DIAMETER.		OCCIPITO PARIETAL DIAMETER.		OCCIPITO BREGMATIC DIAMETER.	
	inches	lines	inches	lines	inches	lines
7 months.	2	9	3	8	2	10
$7\frac{1}{2}$,,	3	0	3	9	3	0
8 ,,	3	1	3	10	3	1
$8\frac{1}{2}$,,	3	2	4	0	3	2
9 ,,	3	4	4	0	3	4

These measurements, I believe, to be according to the Paris scale. To turn them into English measure, a line should be added to every inch.

The usual circumference of the child's head is from $13\frac{1}{2}$ to 15 inches. Under hydrocephalus, a disease which may commence in the fœtus, as early as the second month, the circumference may increase to 24 inches.—(Perfect Cases of Midwifery, vol. 2, p. 525). Where under such circumstances, the labour has been allowed to proceed without the head being opened, the mother has often sunk from exhaustion. In one case the uterus was ruptured. (Bell, Med. Chir. Trans. vol. iv).—J. S. S.

PLATE XXXII.

VASCULAR SYSTEM OF THE FŒTUS.

Figure 1.—Distribution of the blood vessels to all the viscera of the thorax and abdomen, except the thymus gland and the digestive canal which have been removed. (*Half size*).

A. Anterior surface of the heart.
B. Left lung.
C. Thyroid gland.
D. Inferior surface of the liver raised and turned outwards.
E. Gall bladder.
F. Spleen.
G, G. Kidneys.
H. Rectum.
J. Uterus.
K. Bladder.
L. Diaphragm.
M. Ureter.

1. Aorta at its origin.
2. Pulmonary artery.
3. Vena cava superior.
4. Arteria innominata.
5. Left subclavian vein.
6. Right common carotid artery.
7. Left internal jugular vein.
8. Abdominal aorta.
9. Entrance of inferior vena cava into the right auricle of the heart.
10. Inferior vena cava, previous to its bifurcation into the common iliacs.
11. Cæliac axis.
12. Umbilical cord.
13. Ovarian artery and vein.
14. Right common iliac artery.
15. Left common iliac vein.
16. Umbilical arteries, separated by the urachus.
17. Mesenteric veins.
17¹. Splenic vein, forming with the preceding, the vena portæ.
18. Emulgent artery and veins.
19. Umbilical vein.
20. Ductus venosus.

Figure 2.—Origin of the vessels from the base of the heart. (*Full size*).

A. Right ventricle of the heart.
A¹. Left ventricle.
B. Right auricle.
C. Left auricle.
D. Aorta.
E. Pulmonary artery.
F. Canalis arteriosus.
G. Left pulmonary artery.
H. Vena cava superior.
J. Arteria innominata.
K. Right common carotid artery.
L. Right subclavian artery.
M. Left common carotid.
O. Left subclavian.
P. Termination of the transverse portion of the aorta.
Q, Q, Q, Q. Lungs.

Figure 3.—Cavities of the right auricle and ventricle: foramen ovale. (*Full size*).

A. Inter-auricular septum.
B, B. Section of the walls of the right auricle.
C. Cavity of the right ventricle.
D, D, D. Section of the walls of the right ventricle.
E. Inter-auricular communication or foramen ovale.
F. Inferior vena cava.
G. Superior vena cava.

Figure 4.—Inferior surface of the liver. (*Full size*).

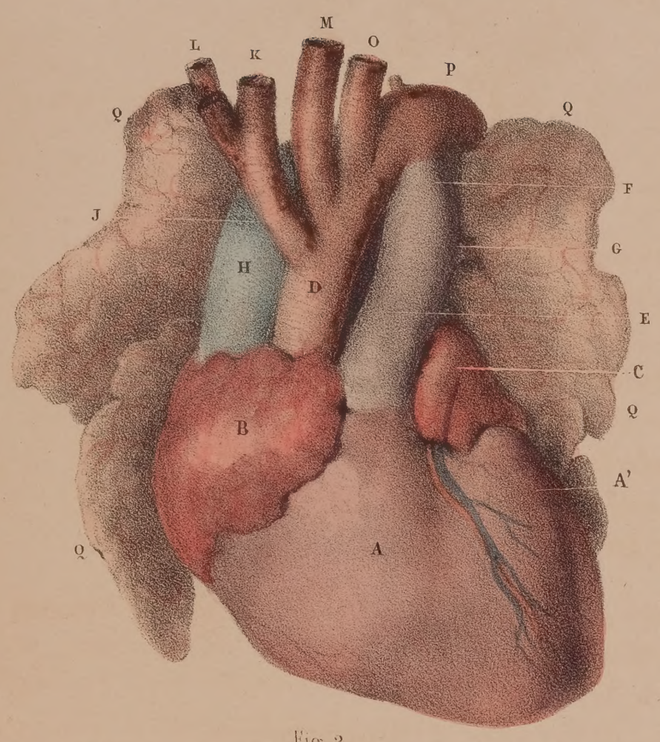
A, A, A, A. Margin of the liver.
B. Lobulus spigelii.
C. Gall bladder.
D. Vena cava at its entrance into the heart.
E. Hepatic veins falling into the vena portæ.
F. Vena cava below the liver.
G, G. Branches given off by the umbilical vein before it enters the vena portæ.
H. Trunk of the umbilical vein, situated in the fissure that bears its name.
J. Ductus venosus.
K. Trunk of the vena portæ.

Figure 5.—Lumbar and pelvic vessels, origin of the hypogastric arteries.

A. Promontory of the sacrum.
B, B. Psoæ muscles.
C, C. Section of the abdominal parietes.
D. Rectum.
E. Bladder.
F. Umbilicus.
G. Umbilical cord.
H. Aorta.
J. Inferior vena cava.
K. Common iliac artery.
L. Left common iliac vein.
M. Internal iliac artery.
N. External iliac artery.
O. Umbilical or hypogastric arteries.
P. Umbilical vein.
Q. Urachus.

Remarks.—The peculiarities of the circulating system of the fœtus are here represented, and its modifications from those of the adult will be seen to depend upon the existence of the placental circulation, and the undeveloped state of the lesser or true pulmonary circulation. The umbilical or hypogastric arteries (fig. 5) are rather continuations of the iliac arteries, than branches given off by them. They are the analogues of the arteries of the allantois in the chick. One of them is occasionally small or deficient. The pulsations of the fœtal heart are distinctly recognizable by mediate or immediate auscultation over a more or less extensive surface of the abdominal parietes of the mother. This surface varies according to the position of the child and the disposition of the fœtal and maternal organs. The pulsation is a quick clear and abrupt double sound, a kind of miniature of that of the adult heart, but wanting its impulse. The fœtal heart, indeed, from the thinness of its parietes communicates little if any impulse, but owing to the greater capacity of its chambers, in relation to the thickness of its walls, its sound is audible over a greater space than in the adult. The pulsations of the fœtal heart are ordinarily about 130 or 140 in a minute, but sometimes much slower, and sometimes much more rapid. The pulsations of the fœtal heart of course, clearly prove the existence of pregnancy and the vitality of the child, while their absence, though not absolutely conclusive, is a negative sign of great value in all doubtful cases. In a new born infant, the action of the heart affords the most delicate test of vitality. It may be heard pulsating by the stethoscope when there are no other signs of life, and where perseverance will succeed in bringing the child to breathe and live. (Vide Evidences of Pregnancy and Observations on Obstetric Auscultation, by Dr. Evory Kennedy, London, 1833.)

The researches of M. Moreau, communicated to the Royal Academy of Medicine, 1837, prove that the place of insertion of the umbilical cord will not of itself suffice to determine the age of a fœtus or newly born child, as several medico-legal writers assert.—J. S. S.



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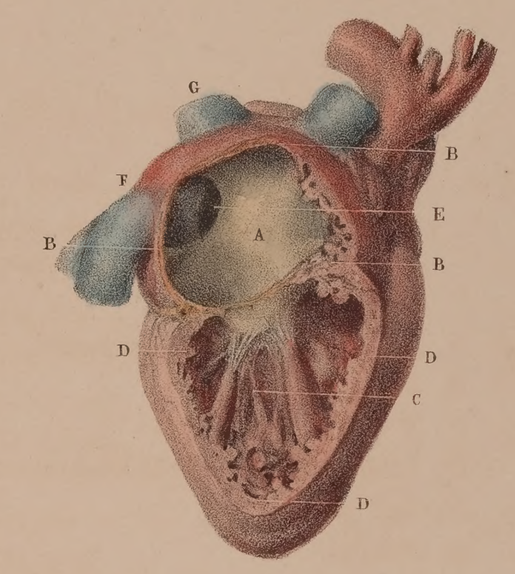

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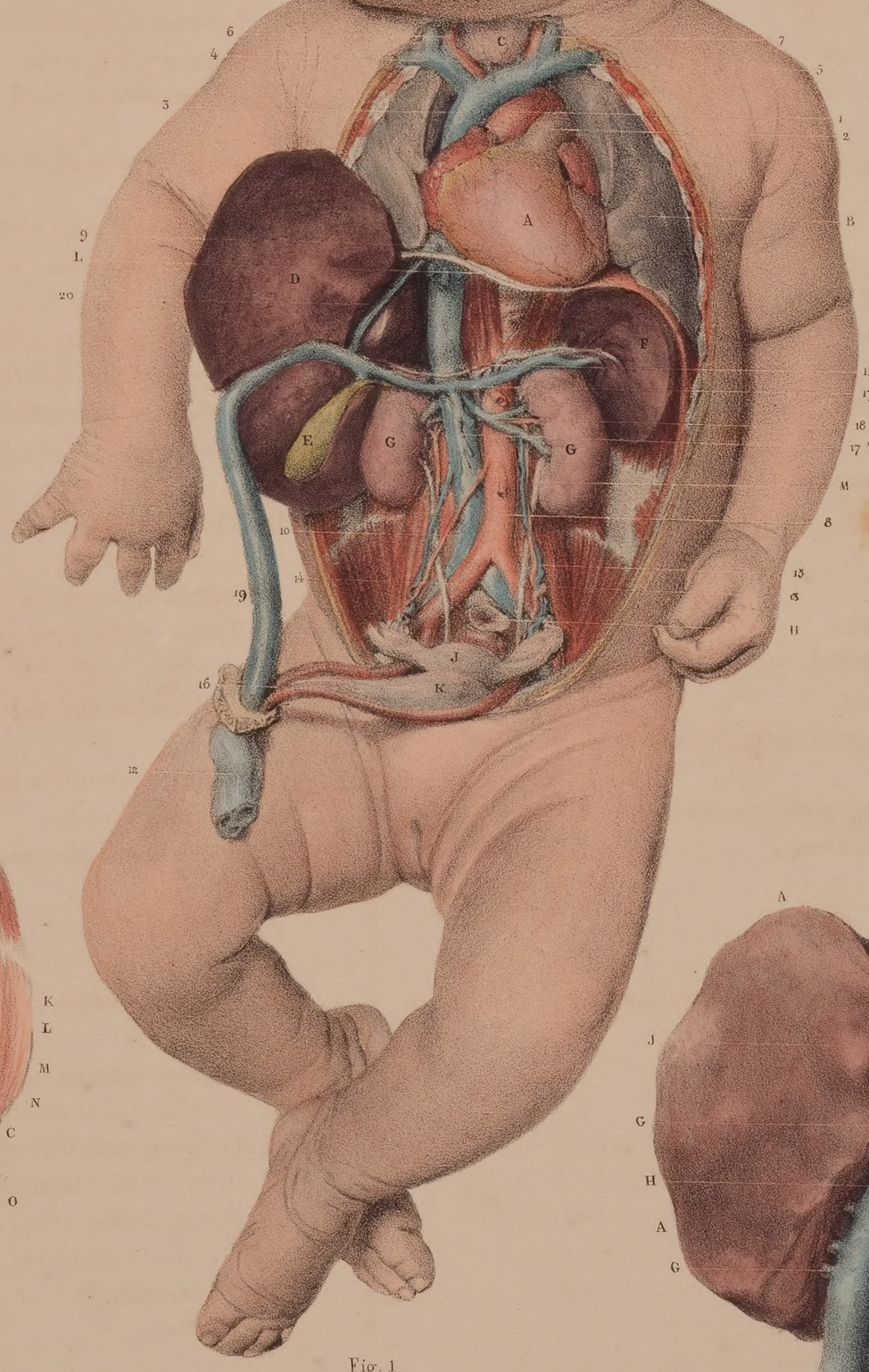

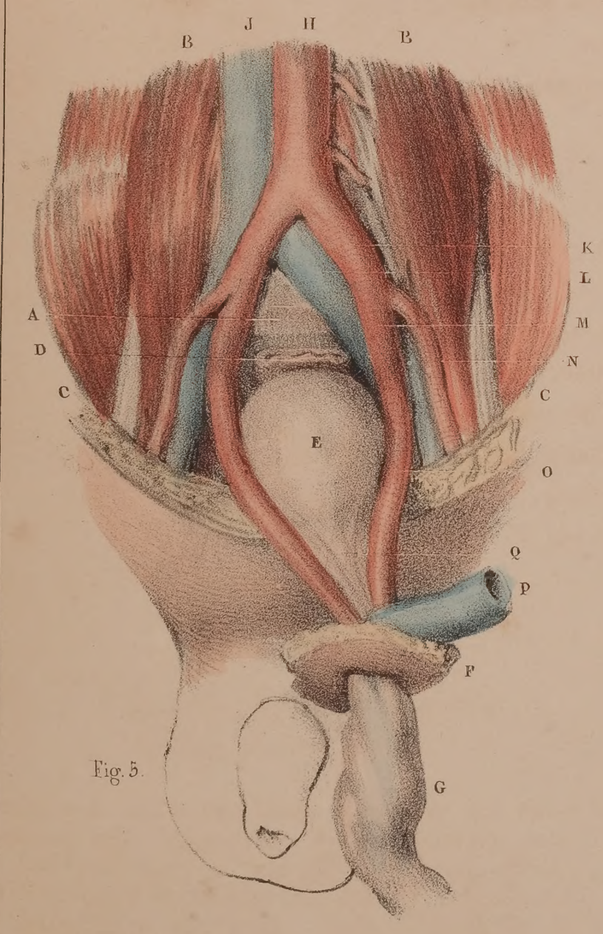

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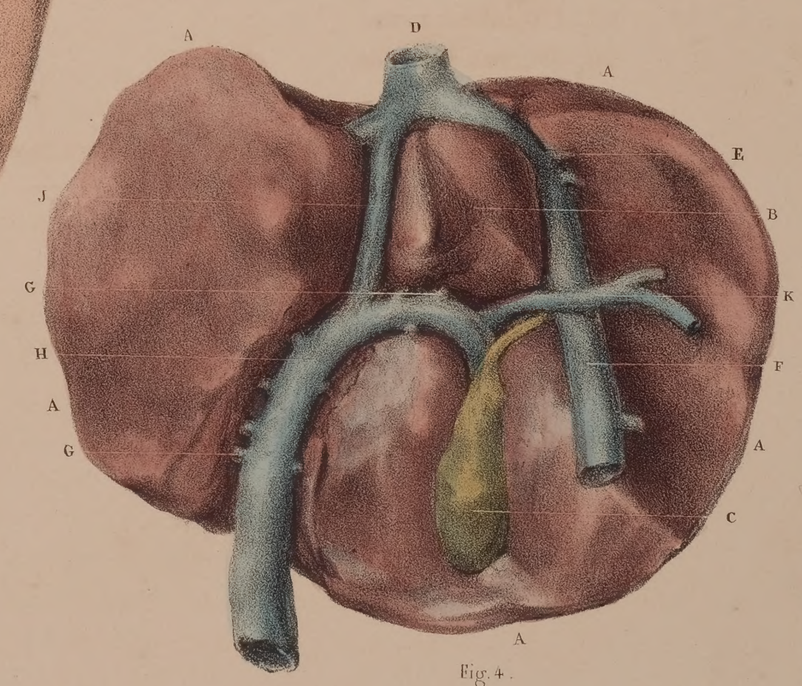

Fig. 4.

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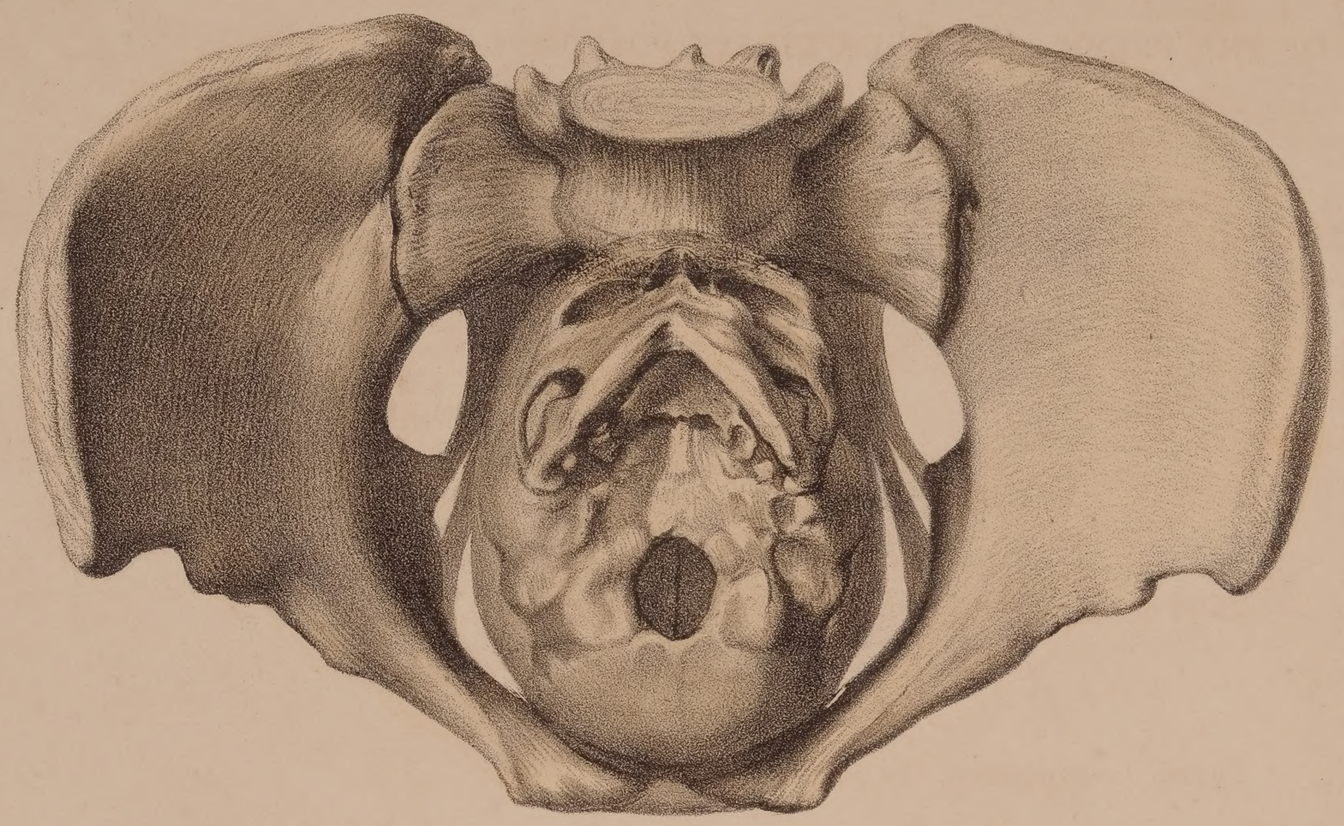

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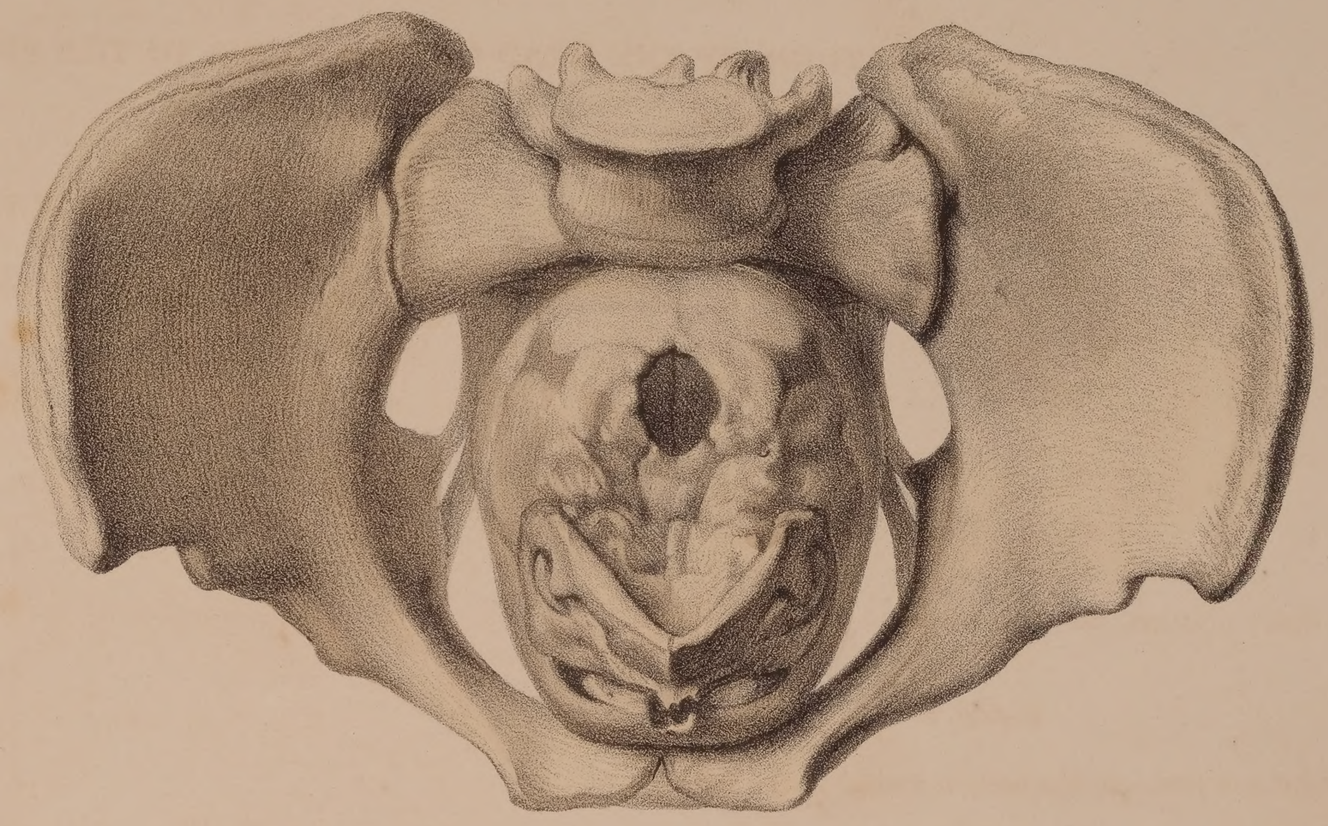

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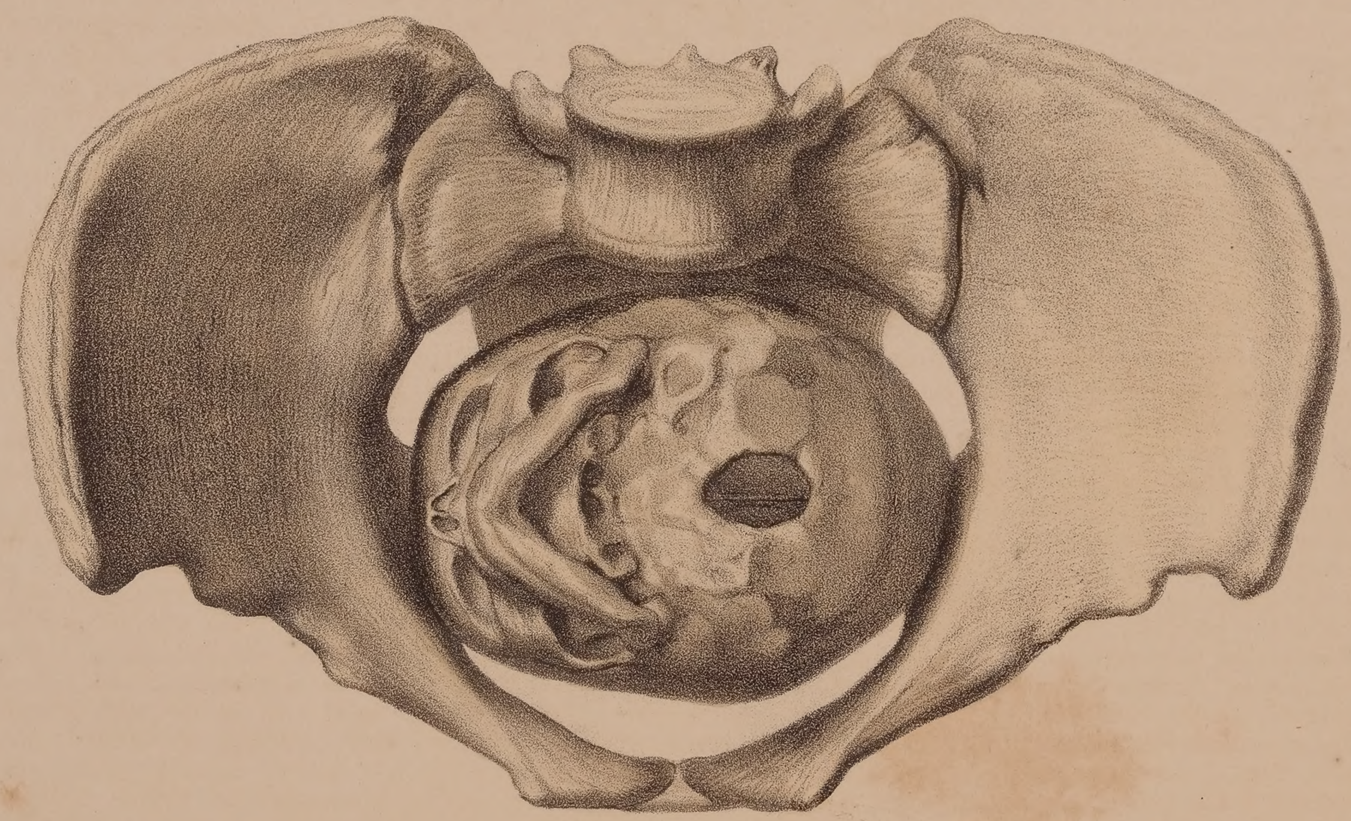

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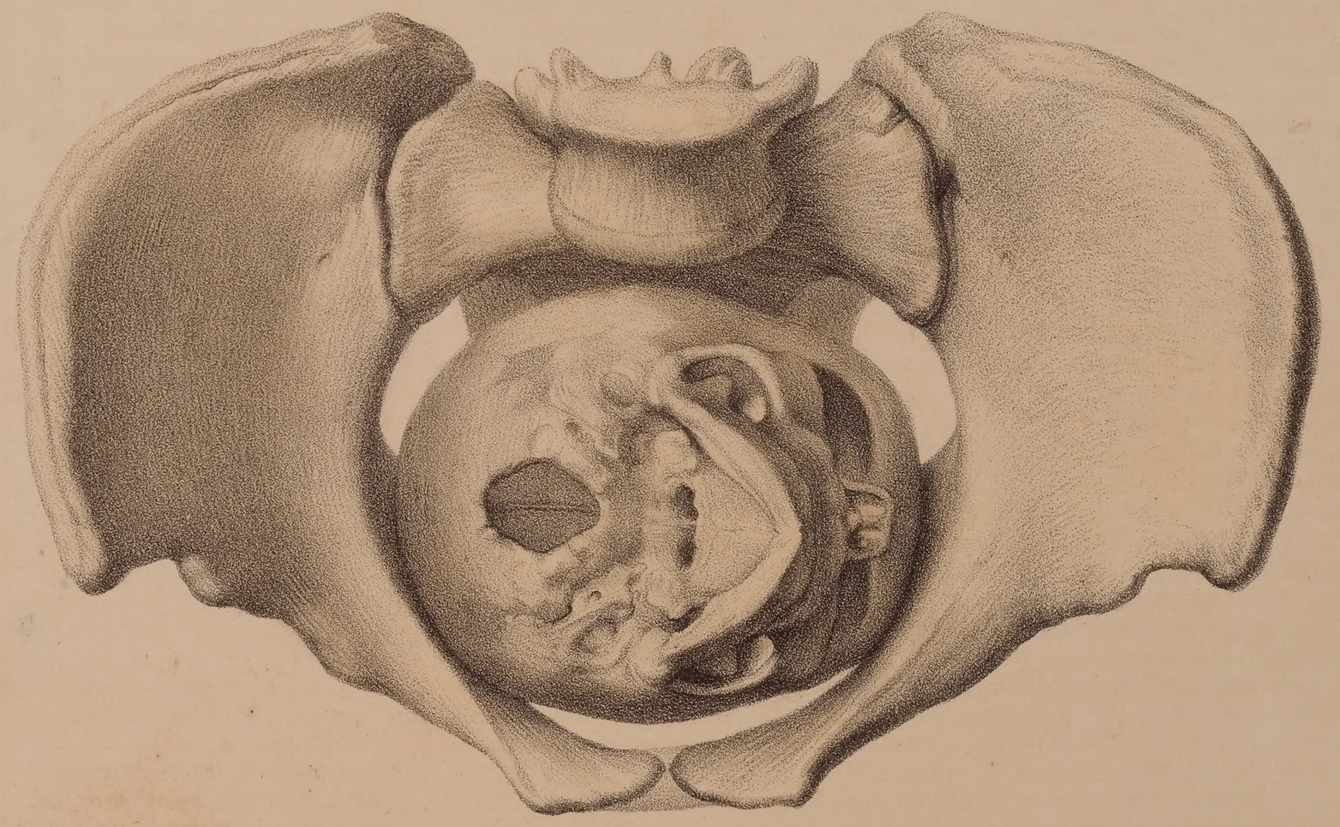

Fig. 2.

Dessiné d'après nature par Emile Beau.

Paris, publié par Germer Baillière.

Lith. de Fourquemin.

PLATE XXXIII.

RELATIONS OF THE HEAD OF THE FŒTUS TO THE BRIM OF THE PELVIS: THE FOUR DIRECT POSITIONS.

(HALF SIZE.)

Figure 1.

First direct position, the occiput turned to the left ilium.

Figure 2.

Second direct position, the occiput turned to the right ilium.

Figure 3.

Third direct position, the occiput turned to the pubis.

Figure 4.

Fourth direct position, the occiput turned to the sacrum.

Remarks.—While the head remains above the brim, it is altogether uncertain, in what position it will enter and pass through the pelvis. The characteristic signs of the different positions are at that time ascertained with difficulty, and it is not till the head is engaged in the cavity that its exact direction can be predicted with any thing like certainty. The sagittal suture may, at that time be generally felt leading to either the anterior or posterior superior angle of the parietal bone. If, however, the anterior fontanelle is diminished by the bones overlapping, or the posterior increased from insufficiency of ossification, the two fontanelles may to the sense of touch so resemble each other, that one position of the vertex may be readily confounded with another. It is not warrantable, however, to inflict pain on the mother, for the purpose of making out the exact position, since the whole tenor of the facts, observed by Naegele (who has given the subject of presentations the greatest attention) discountenances the idea of its being ever necessary or expedient to change the position of the head. (Naegele, Mechanism of Parturition, by Rigby, London). Of the direct positions, those where the face looks directly to one ilium or the other (fig. 1 & 2) are by far the most common; while those where the face is placed directly against the promontory of the sacrum or above the symphysis pubis, are so extremely rare, that many writers have absolutely denied their occurrence. When the head has been positively ascertained to occupy the positions represented in fig. 1 & 2, the Editor believes that he has accelerated the turning of the face into the hollow of the sacrum, and abbreviated the duration of labour, by introducing a finger between the symphysis pubis, and the side of the head near the temple, and steadily pressing during the pains against the frontal bone, in a manner similar to that practised by Dr. John Clarke in fronto cotyloid and face to the pubes presentations.—Trans. of a Society for the improvement of Med. and Chir. Knowledge, vol. 2, London.

In the following brief exposition of the mechanism of parturition, Naegele's views are adopted. It is principally taken from Dr. Maunsell's chapter on that subject in the Dublin Practice of Midwifery, 1834. The modes in which nature essays to accomplish the transit of the mature fœtus through the pelvis, present three grand varieties. 1st. Presentations of the head. 2nd. Presentations of the breech or lower limbs; and, 3rdly. Presentations of the upper limbs or side of the body. In either of the two first varieties, the fœtus presents with one extremity of its long axis and a comparison of its measurements, and those of the pelvis is sufficient to explain that in ordinary cases no material obstacle to its passage will exist. In the third variety, however, the long axis of the child lies transversely to the pelvic aperture, and then nature is rarely competent, when unassisted, to produce its expulsion.

In the great majority of labours, the head is the presenting part, but varieties exist as to the position in which it enters the brim of the pelvis, as well as in the changes it undergoes during its progression through the cavity. M. Moreau in this and the next plate has figured eight varieties of vertex presentation besides those of the face. Notions, however, of the mechanism by which the head is transmitted sufficiently precise for all practical purposes may be conveyed by explanations of three varieties. In the first position or the occipito-cotyloid (Pl. 34, fig. 1 & 2) the head enters the brim with its posterior fontanelle directed toward either acetabulum (generally the left) and the forehead directed toward either sacro-iliac synchondrosis (generally the right). The presenting part, or that which is touched most readily upon vaginal examination is the superior portion of one of the parietal bones near its tuber; consequently the head descends obliquely into the pelvis, neither the vertex nor the sagittal suture being the lowest part but one of the parietal bones; the right when the posterior fontanelle is directed towards the left acetabulum, and the left when it lies toward the opposite side. By this oblique position of the head, its transverse diameter is rendered somewhat less than that which would be described by a line passing between the two parietal tuberosities, which if the vertex was the lowest or presenting part, would be the moving transverse diameter. During this stage of the process, the chin of the fœtus is depressed upon its chest, so as to bring the shortest of the long diameters of the head, or that between the lower part of the occiput, and the upper part of the forehead into the direction of the oblique or longest diameter of the pelvis. At this time, the greater fontanelle, or the vertex is lower than the lesser, and being situated anteriorly, can, from the shallowness of the pelvis be felt very near the external opening. As the head descends, the face inclines to the hollow of the sacrum, and the vertex approaches the symphysis pubis. It is, however, the parietal bone which first escapes, and the vertex does not reach the anterior central line, until in the very act of being expelled from the outlet. The mechanism by which this turning is accomplished is extremely interesting. The hollow of the sacrum is provided for the reception of the bulky face of the child, while the convergence of the point of the sacrum and spines of the ischia, and the bevelling of the inner surface of the rami pubis form so many inclined planes, upon which the round smooth cranium is guided forward under the pubic arch. The change effected on the expulsion of the head, brings, at the same instant, the long diameters of the shoulders obliquely into the brim of the pelvis, and thus the beautiful adaptation of parts, by which the long diameters of the brim and outlet are placed at right angles with each other is taken advantage of. The head soon after its expulsion is again turned with the face toward one thigh of the mother, and thereby the greatest breadth of the shoulders from side to side, is brought into the direction of the long diameter of the outlet from before backwards; the rest of the body and limbs follow without difficulty.

In the second position or fronto-cotyloid (Pl. 34, fig. 3 & 4) which is much less frequent than the first, the posterior fontanelle is directed toward either sacro-iliac synchondrosis (generally to the right) and the forehead is turned towards either acetabulum (generally to the left). The presenting part is the upper and fore part of one of the parietal bones, the head, as in the first position, descending obliquely into the pelvis. As the force of the uterus continues to act upon the head, the round and bulky vertex and tuberosity of one parietal bone are directed against the inclined plane, formed by one of the spines of the ischia, and by it guided forwards toward the neighbouring acetabulum, while the less bulky, but smooth forehead, is by the same motion, passed backwards towards the sacro-iliac synchondrosis of its own side. In this situation, the head is expelled, the case being in fact converted into one of the first position. In some few instances, however, the vertex instead of being directed forwards, as described above, is turned toward the sacrum, and the upper and fore part of one of the parietals, passes out first under the arch of the pubis, constituting a presentation with the face to the pubis. This is a less favourable position than the first, as the head passes not flexed, but extended upon the trunk, and consequently the moving diameter is the second longest, being that between the lower part of the forehead and the upper part of the occiput. In the third position or face presentation, the face usually enters the brim with the forehead toward one sacro-iliac synchondrosis (generally the left) and the chin towards the opposite acetabulum (generally the right). The presenting part, then, is the upper portion of one cheek. As the labour advances, the chin is directed under the pubic arch and passes first out of the pelvis, occasionally, but rarely, the forehead will be, at the commencement directed toward one of the acetabula, and the chin may turn back toward the hollow of the sacrum. In face presentations the moving diameter of the head is its longest, being that between the chin and the vertex.

Into one of these three positions, the Editor believes all conceivable varieties of head presentations in the progress of labour, eventually resolve themselves. The head gradually adapts itself during one pain by a movement of rotation, during another by one of inclination, or by compression to the *least resisting part* of the pelvic space, through which it is forced by the reiterated contractions of the uterus. The progression is thus gradually accomplished by a moulding and adaptation of the head to the pelvis, until the head descends low enough to be extended on the spine and rotated round the arch of the pubes as a centre.—J. S. S.

PLATE XXXIV.

RELATIONS OF THE HEAD OF THE FŒTUS TO THE BRIM OF THE PEVIS; THE FOUR OBLIQUE POSITIONS.

(HALF SIZE.)

Figure 1.

First oblique position; the occiput turned to the left acetabulum.

Figure 2.

Second oblique position; the occiput turned to the right acetabulum.

Figure 3.

Third oblique position; the occiput turned to the right sacro-iliac symphysis; or, the forehead turned to the left acetabulum.

Figure 4.

Fourth oblique position; the occiput towards the left sacro-iliac synchondrosis; or, the forehead to the right acetabulum.

REMARKS.—In this plate the four oblique and most frequent presentations of the vertex are represented. During the passage of the head, as noticed in the remarks of the preceding plate, two rotations take place on the vertebral column of the child, the one in the lateral, the other in the vertical direction. The first is the turn usually described, that namely, which brings the face into the hollow of the sacrum and the occiput under the arch of the pubes (Pl. 37, Fig. 2). The second is the movement of extension during which the chin quits the chest, and the head is rotated round the arch of the pubes as a centre. (Pl. 38, fig. 1 & 2). The variety, says Dr. E. W. Murphy,* in which the head may be rotated laterally on the vertebral column in any given direction of the pelvis, has given rise to the classification into positions of the head from two up to eight, from the two most obviously opposed to each other, the occipito-cotyloid and fronto-cotyloid, to all the intermediate positions in which the head may be placed. The deviations in the presentation of the head, which are supposed to give rise to delay or difficulty in labour, have been arranged as follows: 1st. The fronto cotyloid presentation. 2nd. The chin departing too much from the chest of the child. 3rd. The face presenting. 4th. The hand and arm descending with the head. Of the first, Dr. Murphy states that much difference of opinion has existed, as to the management of the fronto-cotyloid position of the vertex, some authorities insisting upon the necessity of changing it into the occipito cotyloid by immediate manipulation, while others equally condemn all such interference. Dr. Murphy amply proves, that the process of nature, has not been sufficiently studied in this instance, nor her operations so perfectly understood, that the practitioner should on light grounds venture to supply her place. "It is time enough," he says, "to wait till we know that nature cannot accomplish her object, and which can be readily ascertained long before any dangerous symptoms present themselves by finding the head stationary, though the pains be vigorous. The head may then be dislodged from its situation and gently moved from the position into which it has been forced to that which offers the least resistance, and when once the head is disengaged it will glide naturally into the widest space, if our fancied sagacity, as to what that space is, does not force it into some other equally unfavourable position." The observation of a large series of cases by Dr. Murphy, confirms the accuracy of Naegele's assertion, that where the head enters the brim of the pelvis in the left fronto-cotyloid position, it is generally expelled from the outlet, in the same manner, as when it enters the brim in the right occipito-cotyloid, and the opposite, and as in a well-formed pelvis this presentation does not cause delay, in the progression of the head to any injurious extent, it may, contrary to the opinions of Burns and Dewees, be safely left to the natural efforts. This opinion is confirmed by the experience of Dr. R. Collins, who, speaking of face presentations, and of the face being turned to the pubes, says, "all attempts to alter the position of the head in the early period of labour, when found, presenting in either of the above mentioned ways are in my opinion injudicious. The labour should be treated as one perfectly natural." (Practical Treatise on Midwifery, p. 35. London, 1836).

* The Editor cannot too strongly recommend the perusal of Dr. E. W. Murphy's papers on the Management of the first and second Stages of Labour in the Dublin Medical Journal, vol. xi & xvi. They are highly philosophical and full of physiological and practical information. He cannot, however, participate in the idea that an abbreviation of the second stage of labour, where possible by facilitating the passage of the head through the pelvis, is likely to produce any injurious effects, immediate or remote on the health of the female.

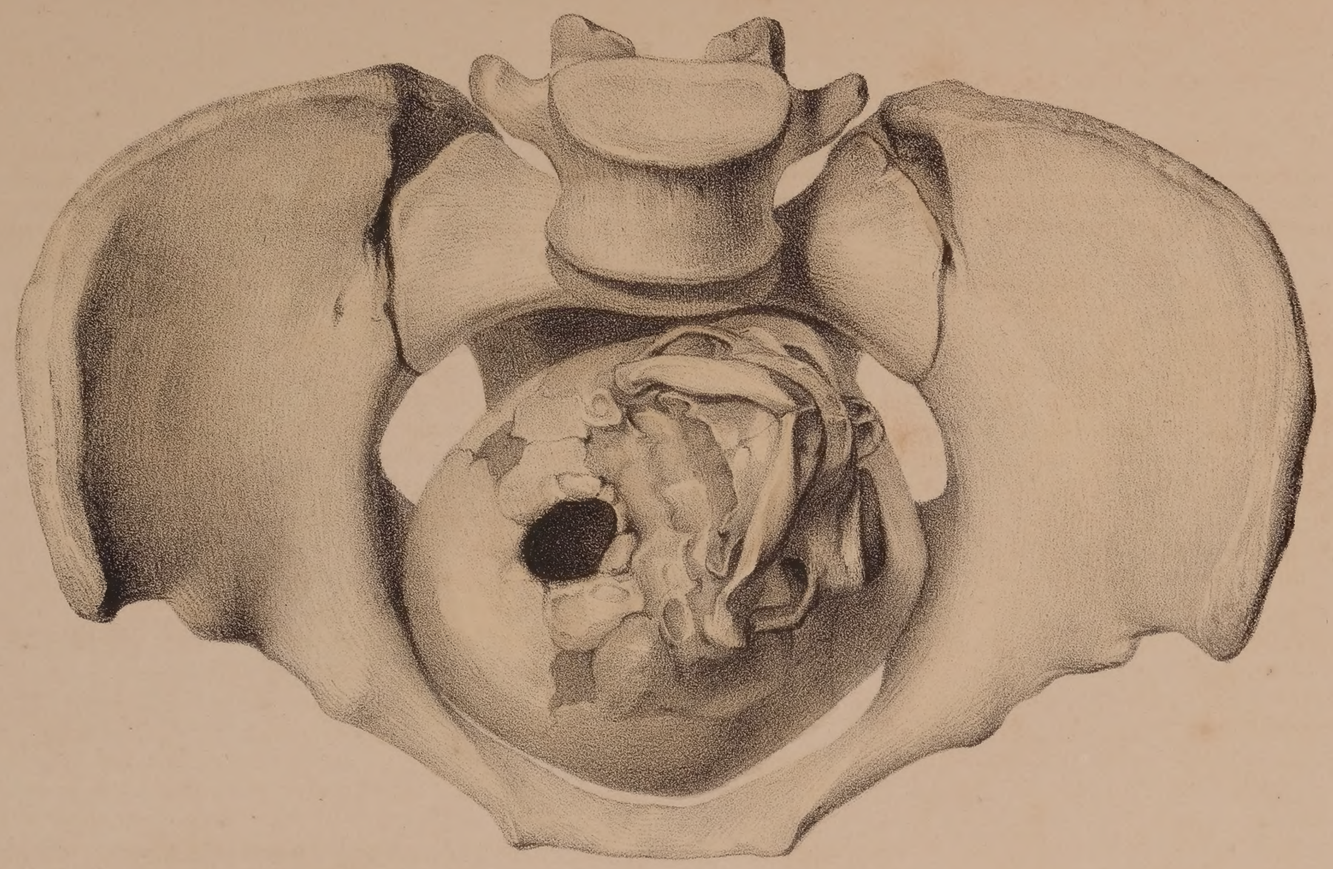

Fig. 2.

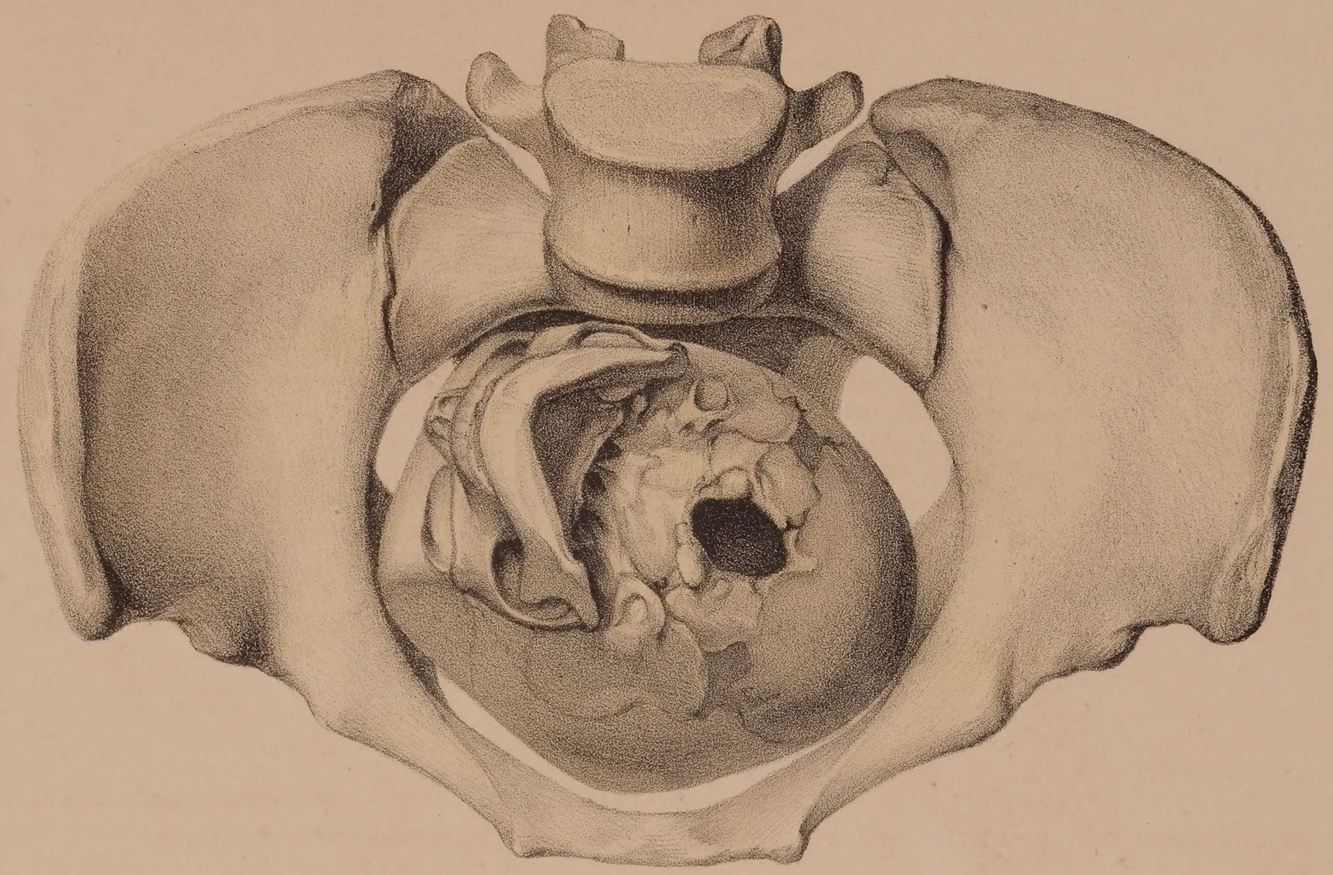

Fig. 1.

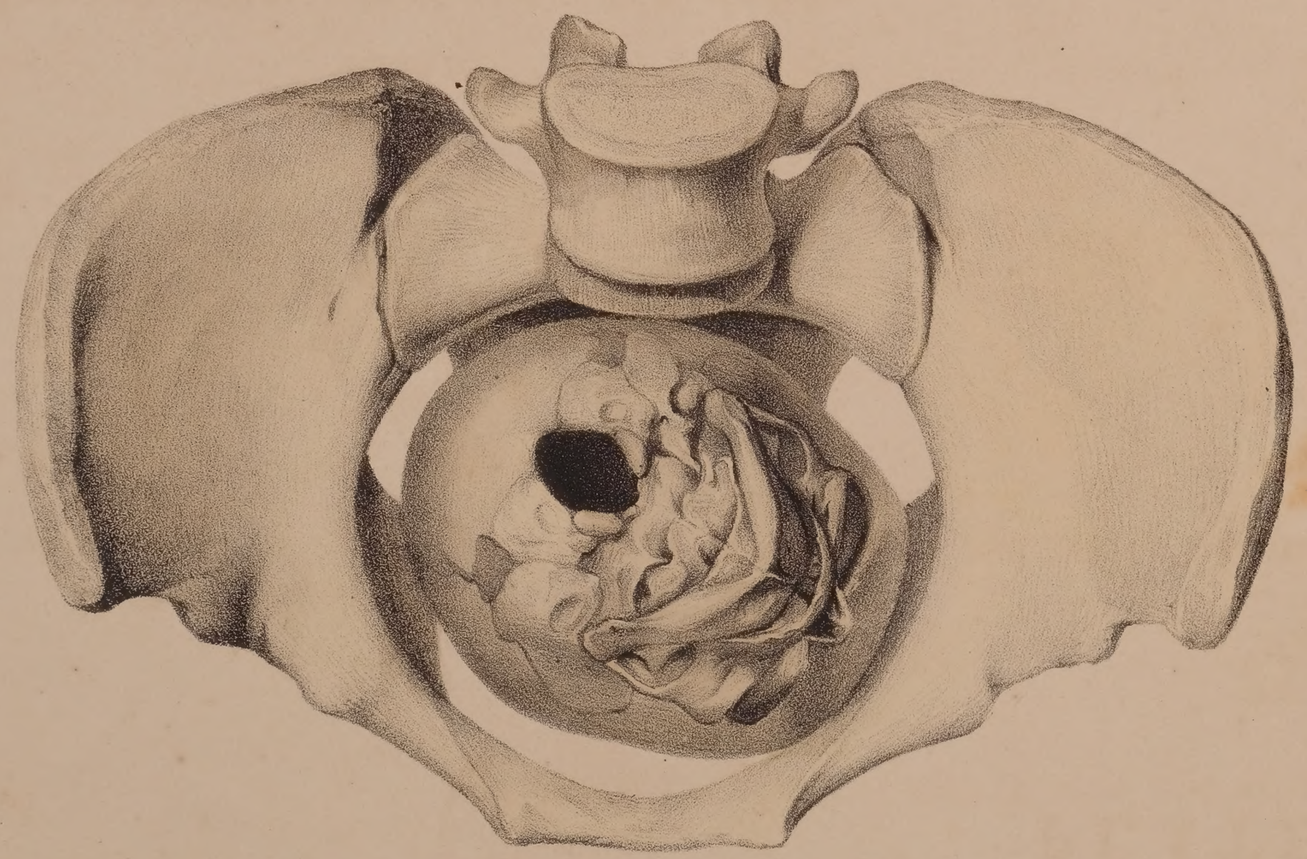

Fig. 3.

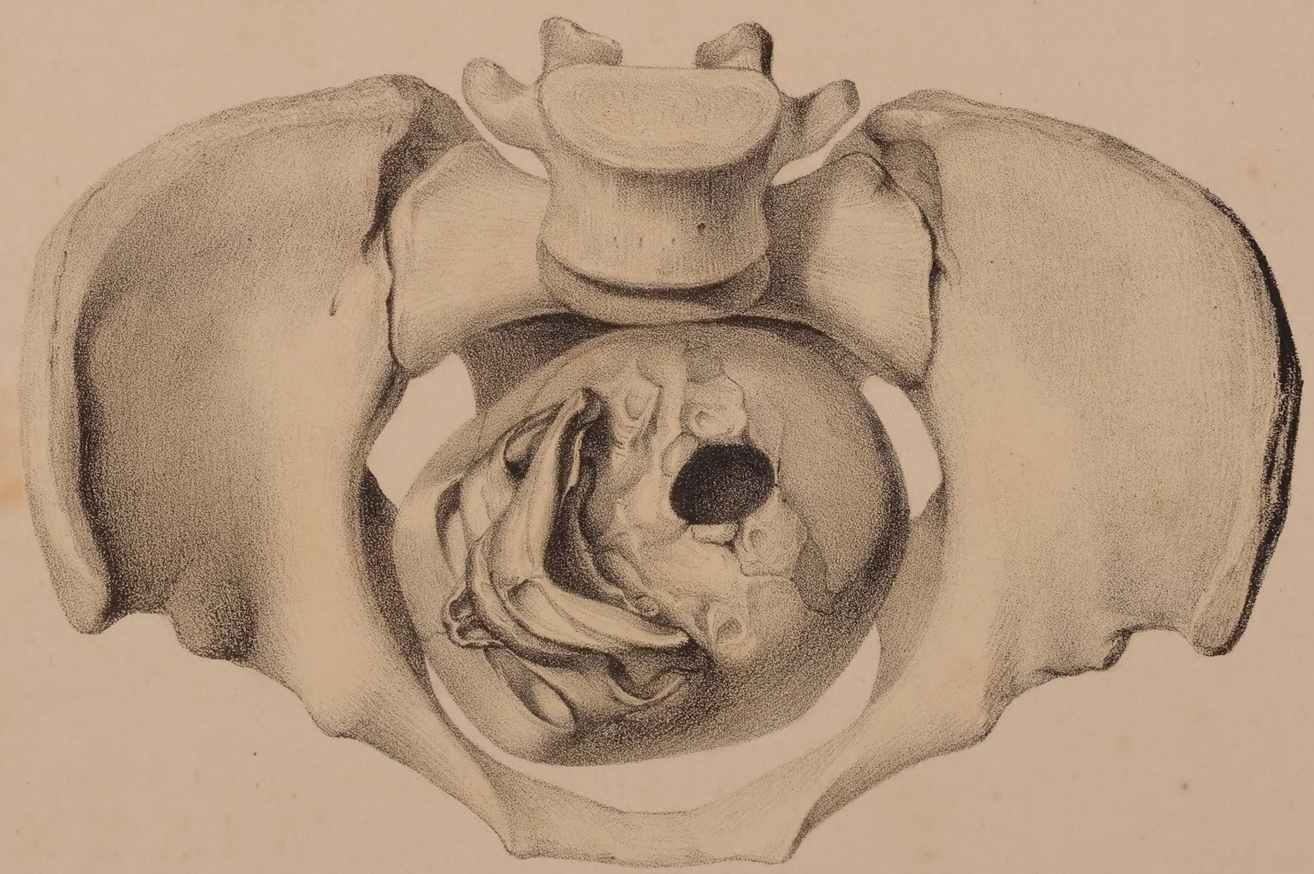

Fig. 4.

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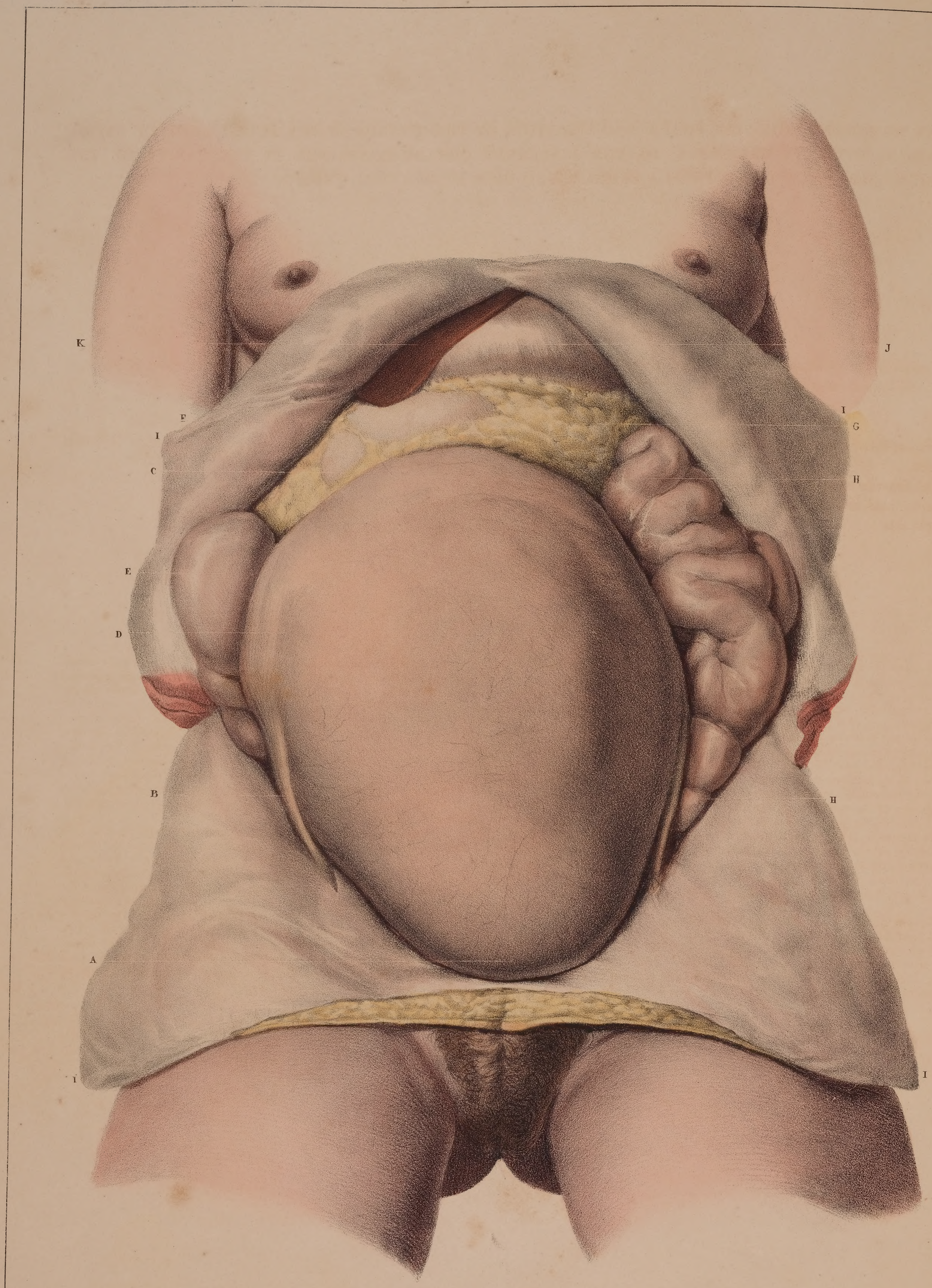

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PLATE XXXV.

THIS PLATE REPRESENTS THE SIZE, SHAPE, AND SITUATION OF THE UTERUS AT THE FULL PERIOD OF UTERO-GESTATION; WITH ITS RELATIONS TO THE DIFFERENT ORGANS CONTAINED IN THE CAVITY OF THE ABDOMEN. (HALF SIZE TAKEN FROM A FEMALE WHO DIED AT THE FULL PERIOD.)

1, 1, 1, 1. Parietes of the abdomen, which have been divided by a crucial incision, and reflected.

A. Inferior or lesser extremity of the uterus at the entrance of the brim.
B. Round ligament of the right side.
C. Superior part or fundus of the uterus, inclined towards the right side.
D. Spreading out of the fibres of the round ligament of the right side.
E. Part of the ascending colon.
F. Angle where the ascending colon becomes transverse.
G. Transverse colon covered by the greater omentum (epiploon majus).
H, H. Convolutions of the small intestines.
J. Stomach.
K. Liver.

Remarks.—The situation of the fallopian tubes more than one third down the gravid uterus, merits notice, because this circumstance shows, as Mr. Hugh Carmichael contends, that the enlargement which the uterus undergoes during pregnancy, is not universal, but chiefly produced by an expansion of its anterior paries, each superior part of which arrives at the fundus, and then turns over to form a portion of the posterior parietes till the expansion is complete. The ovaries are also approximated to the body of the uterus, and the layers of the broad ligaments expanded over its sides. The intestines are placed behind and above the uterus, so as to be removed from the front of the abdomen, a circumstance particularly favourable, where pregnancy is complicated with reducible hernia through any of its apertures. The bladder when distended, usually rises above the brim of the pelvis, drawing the urethra into nearly a vertical direction. The meatus is in consequence deeply situated within the pubic arch, and the introduction of the catheter, therefore, rendered, in some degree, more difficult in pregnant, than in other women. The occasional distention of this organ within the pelvis, and the impediment which it then offers to the completion of labour, have been before alluded to in the remarks appended to Pl. XIX.

The gravid uterus, instead of occupying the median line, is occasionally inclined to the right side as represented in this plate, to the left side, or forwards, or backwards, producing the several states denominated right and left lateral obliquity and anteversion or retro-version of the uterus. These displacements require notice, because they remove the os uteri from its natural situation, and render its detection in the vagina difficult. The lateral obliquities exercise little if any influence on the progress of labour, but the anterior obliquity considerable retards the dilatation of the os uteri. With time and patience, however, and directing the woman to lie on the back during the pains, the labour usually proceeds well. When the os uteri is thrown very far backwards, the head of the child is felt close to the symphysis pubis, with the uterus so thinly expanded over it in some cases, that it might, on insufficient examination, be mistaken and even punctured for the membranes. This state of parts may, however, be distinguished by the pulsation, which exists in the uterine arteries, and by the os uteri being felt on a more careful examination high up and far back towards the sacrum. The attempts at rectifying these displacements by dragging on the os uteri cannot be too strongly deprecated from their liability to produce irritation, inflammation or laceration.

When retroversion coexists with pregnancy, Moreau states that it is a frequent cause of abortion, a cause which has hitherto escaped notice. About the third or fourth month, it most frequently leads to retention of urine and obstruction and fœcal accumulation in the rectum. It is then usually detected, and the uterus replaced by nature or art, but occasionally the impaction of the uterus proves fatal. Such a case is represented in Dr. W. Hunter's Anatomy of the Gravid Uterus, Tab. XXVI. The continuance of retroversion till the full term, has so rarely happened, that its possibility has been denied. Two such cases have certainly been seen and recorded by Dr. Merriman. The labour was in each instance very tedious, both the children were dead (in one the head was opened, as it was putrid) but the women recovered. (Synopsis of Difficult Parturition. London, 1820).—J. S. S.

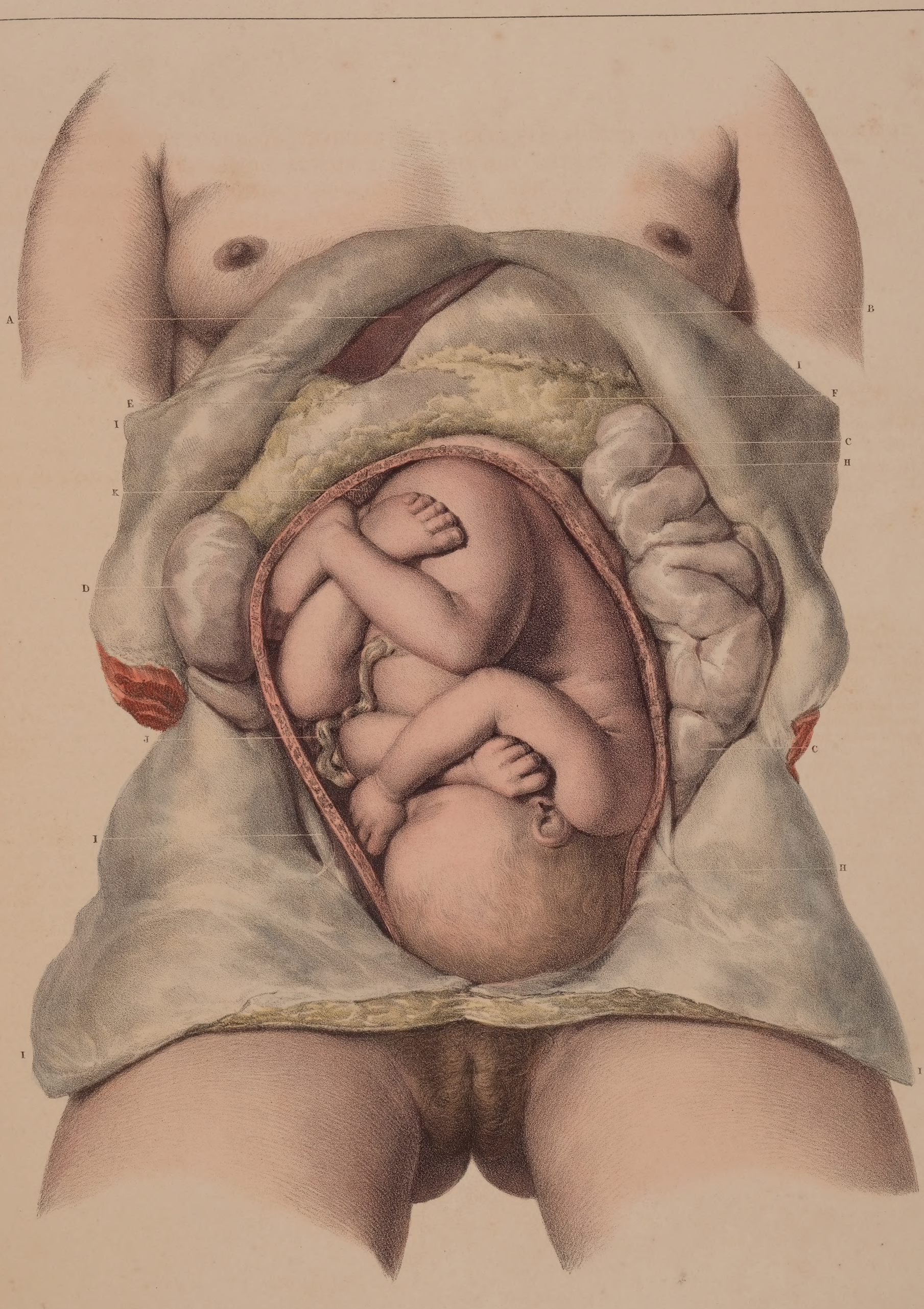
PLATE XXXVI.

THE ANTERIOR HALF OF THE UTERUS HAS BEEN HERE REMOVED, TO SHEW THE POSITION OF THE FŒTUS IN THE WOMB OF THE MOTHER. THE HEAD IS DIRECTED DOWNWARDS; THE BACK IS DIRECTED POSTERIORLY AND TO THE LEFT SIDE. (FOURTH OBLIQUE POSITION, THE FOREHEAD TO THE RIGHT ACETABULUM). HALF SIZE, FROM A FEMALE WHO DIED AT THE FULL PERIOD OF UTERO-GESTATION.

A. Liver.
B. Stomach.
C, C. Convolutions of the small intestines.
D. Ascending colon.
E. Transverse colon; the greater omentum has been here removed to shew the surface of the intestine itself.
F. Greater omentum, (epiploon majus).
H, H. Section of the walls of the uterus.
I. Round ligament of the right side.
K. Part of the placenta adhering to the fundus of the uterus.

Remarks.—In this plate, the true position of the fœtus in utero may be carefully studied. For a long period, this subject was imperfectly understood, and it was not till the middle of the last century, that Sir Fielding Ould of Dublin, determined and made known this most important fact in obstetrical science.—(Treatise upon Midwifery, Dublin, 1742). It is only since correct notions have prevailed on this point, that the true mechanism of natural labour has been investigated with any success, or that anything deserving the name of knowledge of this process has been attained. The position of the placenta should also be remarked near the fundus.

A correct knowledge of the position of the child favours the use of manual aid, determines the employment of the right or left hand, and ensures the correct application of instruments, when either of these means is required. The power should be acquired of seeing with the mind's eye, the child through the walls of the uterus. This may be obtained by a careful study of these plates, by habits of reflection and the aid of a little experience.—J. S. S.



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1.ère Position oblique du Sommet.

Fig. 1. Fin du premier temps.

1.ère Position oblique du Sommet

Fig. 2. Deuxième temps.

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PLATE XXXVII.

MECHANISM OF NATURAL LABOUR, IN THE FIRST OBLIQUE POSITION OF THE VERTEX (OCCIPUT TURNED TOWARDS THE LEFT ACETABULUM).

(HALF SIZE.)

Figure 1.

End of the first stage. The head of the fœtus has undergone a slight flexion; and has descended as far as the bottom of the cavity of the pelvis, without materially changing its relations, since it entered the brim.

A. Symphysis of the pubis.
B. Bladder.
C. Anus.
D. Promontory of the sacrum.

Figure 2.

Second stage.—The head of the fœtus has quitted its diagonal position, and has made a turn from left to right. The occiput has been brought behind and below the symphysis pubis. The forehead and face are no longer directed towards the sacro-iliac symphysis, but are lodged in the hollow of the sacrum. The relations of the head are changed. Its transverse diameter corresponds with that of the cavity. The diameter drawn from the occiput to the chin, is nearly the same as the axis of the outlet. The relative position of the body of the fœtus is the same as in the preceding figure; which shows that the movement of the head has been effected by the simple rotation of the neck.

Remarks.—Labour is usually divided into three periods or stages: 1st. The dilatation and expansion of the os uteri, by which the uterus and vagina become one continuous canal. 2nd. The passage through the pelvis and birth of the child. 3rd. The expulsion of the placenta and membranes. The second of these periods has been again subdivided by M. Moreau into four stages each of which is represented with great fidelity and fully described in this and the succeeding plate.

During the first stage of labour, the muscles of the fundus are engaged in mechanically dilating the orifice of the uterus by gradually forcing the bag of the liquor amnii, or the presenting part of the child, against that opening. The process of dilatation, though principally mechanical, is in some degree accomplished by the contraction of those longitudinal muscular fibres which are situated in the body of the uterus and which draw the os and cervix upwards over the protruded membranes or presenting part of the child. The resistance to the dilatation arises chiefly from the elastic property and tension of the lower segment of the uterus, but is occasionally increased to a formidable extent by an irritable contraction of the circular muscular fibres situated there. The grinding pain, experienced at this period, is owing to the resistance and forcible distention of the fibro-elastic tissue. Pain does not necessarily attend the contraction of the muscular fibres of the uterus, but from the resistance which is usually offered to their expulsive power, uterine contraction and labour pains are generally used as synonymous terms. The unresisted contractions of the healthy uterus, however, like those of the bladder and rectum are really unattended with pain.

In the second stage of labour when the orifice of the uterus is completely dilated, the head of the child gradually advances, and the liquor amnii usually escapes, the tension of the uterus becomes lessened in consequence, and its contractile power is thereby greatly increased. The abdominal muscles and diaphragm are now called into action, and, along with the uterus, combine to form an expulsive apparatus of great force, which during alternating periods of action and repose moves the child onwards, adapts the head and shoulders by a very beautiful mechanism to the most appropriate and least resisting parts of the pelvis, and finally completes the birth of the child by overcoming the elastic tension of the perineum.

The process of childbirth, therefore, consists in a series of struggles between the expulsive and resisting forces which are successively called into action. The most healthy and natural labour is that in which these opposing forces are duly and harmoniously balanced; and all the varieties of rapid, lingering, difficult or impossible labour result from the deficiency of the one force or its predominance over the other.

The time required for dilating the os uteri, and that for accomplishing the passage of the pelvis and overcoming the resistance of the perineum, vary greatly in different individuals and bear no fixed or determinate proportion to each other. The following valuable tables taken from the works of Collins, Lachapelle and Merriman will convey accurate information on the entire duration of labour. The extreme rapidity of birth, in many instances, deserves remembrance when infanticide is suspected. The table from Dr. Collins is somewhat abbreviated; it gives the duration of labour as noted in 15,830 cases in the Dublin Lying-In Hospital. (Collins' Practical Midwifery, p. 22, London, 1836).

COLLINS.

Hours	¼	½	1	2	4	6	12	18
Women	161	309	3067	3513	4407	1955	1672	268
Hours	24	30	36	48	60	72	84	90
Women	240	85	49	79	32	15	3	1

The duration of labour was noted in 2335 women out of 2395 delivered at the Hôpital de la Maternité in 1811, (Lachapelle, Pratique d'Accouchemens, vol. 1, p. 147, Paris, 1821).

LACHAPELLE.

Hours	1	2	3	4	5	6	7	8	10
Women	100	257	257	329	212	317	142	230	174
Hours	12	15	18	24	30	36	48	60	undetermined [delivered before entry into the hospital].
Women	173	67	31	26	9	6	4	1	60

The duration of labour observed in 226 cases of first pregnancy, where the delivery took place without extraordinary assistance. (Merriman's Synopsis, p. 38, London, 1820).

MERRIMAN.

Hours	Within 12	Between 12 & 24	Between 24 & 30	Between 30 & 40	Between 40 & 50	Between 50 & 60	Between 60 & 70	Between 70 & 80
Women	111	70	12	16	7	5	3	2

—J. S. S.

PLATE XXXVIII.

MECHANISM OF NATURAL LABOUR, IN THE FIRST OBLIQUE POSITION OF THE VERTEX. (THE OCCIPUT TURNED TOWARDS THE RIGHT ACETABULUM).

(HALF SIZE.)

Figure 1.

Third stage.—The head of the fœtus is extended or bent backwards, to allow the occiput to slip below and in front of the symphysis pubis, whilst the forehead and face pass over the inclined plane formed by the sacrum, os coccygis, and perineum. The shoulders of the fœtus get into the oblique diameter of the brim, which gave passage to the transverse diameter of the head.

Figure 2.

Fourth stage.—The head of the fœtus, having got free from the outlet and the vagina, has made a reflex movement, which has brought it into an analogous position to the one in which it was situated in the brim. The occiput is turned to the left groin, whilst the forehead and face are directed towards the posterior and internal surface of the right thigh of the mother. The shoulders of the fœtus, having entered the cavity of the pelvis, have made a turn, which has brought the right shoulder behind the symphysis pubis, and the left one into the concavity of the sacrum.

Remarks.—Fig. 1. During this stage, the perineum becomes distended in a remarkable manner, and the risk of its laceration occurs. In some very rare cases, the child has been expelled through a transverse rent of this part, but most commonly it yields at the fourchette and the rent runs backwards. Dr. Collins considers that inflammation produced in this part, by too frequent and injudicious vaginal examinations, is a frequent cause of this accident. In proportion as the perineum is inflamed, the more reluctantly will it yield to the passage of the child, and the more likely will it assuredly be to tear. It is best supported by pressing it gently and equally against the head, and by giving the occiput a direction at the same time under the arch of the pubes. When inflammation of the soft parts has not been excited during the progress of labour, and the perineum is properly supported during the passage of the head and shoulders, laceration will but very seldom take place. In cases where the fœtus has died and the abdomen is distended with air from putrefaction, great caution and even puncturing that part may be necessary.

When the arch of the pubes is narrow and the angle which it forms is less than the standard, the depth of the front of the pelvis is increased, and the vertex must be forced by the pains lower than usual, before the occiput becomes engaged in the arch of the pubes and the movement of extension on the spine here represented can take place. The labour is in consequence retarded, and the perineum more distended during the passage of the head. When, on the contrary, the pubic arch is wider, and the angle very obtuse, the pelvis is usually shallow, and the passage of the head takes place rapidly, and with little resistance. This state of pelvis is often met with in short women, and accounts for their easy labours.

When the chin separates from the chest at too early a period of the labour, the forehead descends too low, and the head becomes fixed with the occipito-frontal measurement, nearly corresponding with the bis-ischiatic or transverse diameter of the pelvic cavity. This deviation may be easily detected by the extreme distinctness and central position of the anterior fontanelle, and by the immobility of the head, notwithstanding the finger can be passed along its pubic side with facility, and there seems sufficient space for its advance. As it usually occurs in a wide pelvis, delivery often takes place by the natural efforts. The forehead continues to descend and changes the head from the longitudinal axis to a line passing from the superciliary ridge to the bregma, an oblique measurement similar to the occipito-bregmatic, but taken in the opposite direction. The forehead is, therefore, first expelled in the same way as the occiput in ordinary cases; the tumour will be found on the forehead and the passage of the perineum difficult. If discovered previously to the descent of the forehead, or when the head is fixed in its occipito-frontal diameter, the correction is easy by resisting its descent, or pressing upwards the frontal bone, and thus allowing the occiput to assume its natural position. The propriety of correcting the position of the head in such a case, is an exception to the general principle of non-interference in the deviations before mentioned, where the pelvis is regular and not deformed.

Fig. 2. This clearly represents that movement of rotation by which the shoulders, which at first entered the pelvis in the oblique diameter, are now seen passing the outlet in the antero-posterior or coccy-pubic diameter. This rotation was first described by Mr. White in his Treatise on the Management of Pregnant and Lying-In Women, 1773, and which was translated into French in 1774.

The following history will serve to convey pretty accurate ideas of what occurs in the most favourable kind of labour. Its process is described by M. Sacombe, from ocular observation, in a tall, well made young woman, aged 16. She was suddenly taken in labour with her first child, and as the pains were forcing, placed on a camp bed, by the side of which he sat, and minuted with his watch in one hand, and pencil in the other, the accession, duration and effects of each pain. It will be seen that as the interval between the pains lessened, their duration and force progressively increased. The interval between each pain, its duration and effects are successively stated.

	BETWEEN THE	INTERVAL	DURATION	
	1st & 2nd pain	15 minutes	21 seconds.	
	2nd & 3rd —	14 —	27 —	
From 10 to 11 A.M. there were 7 pains.	3rd & 4th —	10 —	27 —	The os uteri dilated and approached to the centre of the pelvis, the membranes more and more protruded.
	4th & 5th —	8 —	29 —	
	5th & 6th —	7 —	32 —	
	6th & 7th —	6 —	35 —	
	7th & 8th —	6 —	36 —	
	8th & 9th —	6 —	40 —	
	9th & 10th —	6 —	42 —	
	10th & 11th —	5 —	45 —	
	11th & 12th —	6 —	45 —	
From 11 to 12 there were 12 pains	12th & 13th —	5 —	47 —	
	13th & 14th —	5 —	49 —	
	14th & 15th —	5 —	55 —	
	15th & 16th —	4 —	62 —	
	16th & 17th —	4 —	70 —	
	17th & 18th —	4 —	87 —	
	18th & 19th —	4 —	93 —	The membranes burst and the liq. amnii forcibly discharged.
	19th & 20th —	—	—	Head passed down and through the inferior aperture of the pelvis, the perineum became tense and protruded.
	20th & 21st —	—	—	Head passed through the vulva.
	21st & 22nd —	5 —	—	Body of the infant rotated, so as to direct the shoulders through the long diameters of the pelvis.
	22nd & 23rd —	—	—	Body of the child expelled; after an interval of about five minutes, the placenta was expelled.

—J. S. S.

1.re Position oblique du sommet.

Fig. 1. Troisième temps.

1.re Position oblique du sommet.

Fig. 2. Quatrième temps.

Dessiné d'après nature par Emile Beau.

Publié par Germer Baillière à Paris.

Lith. de Fourquemin.

4.me Position directe du Sommet

Fig. 1. Deuxième temps.

4.me Position directe du Sommet.

Fig. 2. Troisième temps.

Dessiné d. apres nature par Emile Beau

Publié par Germer Baillière à Paris.

Lith. de Fourquemin

PLATE XXXIX.

THIS PLATE REPRESENTS THE SECOND AND THIRD STAGE OF THE MECHANISM OF NATURAL LABOUR, IN THE FOURTH DIRECT POSITION OF THE VERTEX (OCCIPUT TURNED TOWARDS THE SACRUM), AND ALSO IN THE THIRD AND FOURTH OBLIQUE POSITIONS, WHEN IT HAS BEEN FOUND IMPOSSIBLE TO BRING THE OCCIPUT BEHIND THE SYMPHYSIS PUBIS.

(HALF SIZE.)

Figure 1.

Second stage.—The head of the fœtus is situated in the pelvic cavity. The occiput lies in the hollow of the sacrum. The forehead, which lies behind the symphysis pubis, is beginning to move upwards, by the forced flexion of the head, to enable it to pass through the outlet of the pelvis and the vagina.

Figure 2.

Third stage.—The head of the fœtus, after having overcome the resistance of the perineum and vulva, begins a movement of extension. The perineum is situated behind the occiput. The forehead slides under the symphysis pubis, and is seen at the anterior commissure of the vulva, and will be followed by the nose, the mouth and the chin, which will gradually make their exit, in proportion, as the occiput, by rolling round the anterior border of the perineum, is forced further backwards.

REMARKS.—Theoretically considered there is scarcely any part of the child which might not be found to offer itself at the os uteri, as the presenting part, and in consequence, authors, especially the older ones, have described and figured from imagination many presentations, which have never been met with by trustworthy and competent observers. Thus Baudelocque in the completion of a plan marked out by Solayrès, described no less than twenty-three classes. The class of vertex presentation consisted of six orders, and each of the other classes of presentations of four, making a total of ninety-four orders. Many of these when examined in detail are obviously only to be regarded as slight varieties of the more ordinary and fixed presentations. Madame Lachapelle in an able memoir on this subject, says, that the observation of more than 40,000 labours, attended either by herself or under her direction, has only confirmed the existence of twenty-two of these orders, which she has arranged as follows, (vol. 1, p. 23). She has added two more direct presentations admitted by Baudelocque, to those of the vertex, the transverse namely represented in Pl. 33, fig. 1 & 2, and denies the occurrence of the third and fourth direct presentations, represented in Fig. 3 & 4 of the same plate.

LACHAPELLE'S NOMENCLATURE OF PRESENTATIONS.

Genera.	Species (Cardinal or pure presentations).
1st Vertex.	1st Occiput to the left and forwards. 2nd Occiput to the right and forwards. 3rd Occiput to the right and backwards. 4th Occiput to the left and backwards. 5th Occiput to the left transversely. 6th Occiput to the right transversely.
2nd Breech.	1st Loins to the left. 2nd ,, right. 3rd Loins forwards. 4th Loins backwards.
3rd Feet.	1st Toes to the left. 2nd ,, right. 3rd Toes forwards. 4th Toes backwards.
4th Knees.	1st Buttocks to the left. 2nd ,, right. 3rd Buttocks forwards. 4th Buttocks backwards.
5th Face.	1st Forehead to the left. 2nd Forehead to the right.
6th Right Shoulder	1st Head to the left. 2nd ,, right.
7th Left Shoulder	1st ,, left. 2nd ,, right.
Total 7.	24.

Varieties.	(Intermediate, incomplete or inclined presentations).	
1st of Baudelocque 2nd ,, 4th ,, 5th ,, ...	1st Hybrid or Intermediate	1st Head nearly transverse. 2nd Occiput opposite one of the pubic bones. 3rd Occiput opposite one of the sacro-sciatic notches.
	2nd Inclined or Incomplete.	4th Frontal or bregmatic. 5th Occipital. 6th Parietal.
nearly the same as Baudelocque.	1st Diagonal	Loins forwards, 1st and 2nd of Baudelocque. Loins backwards.
exactly as Baudelocque.	2nd Genitals in the centre of the pelvis (near the pubes).	
	3rd Genitals (near the loins) coccyx in the centre.	
	4th Genitals (near the hip) one buttock only in the centre of the pelvis.	
nearly as Baudelocque.	1st Intermediate diagonal	toes forwards. toes backwards.
as Baudelocque.	2nd Only one foot.	
as Baudelocque.	1st Diagonal.	
	2nd Before the thighs near the centre (once met with).	
	3rd Before the legs (the knees separated). [This would almost be the presentation of the abdomen according to Baudelocque, Burton].	
	4th One knee only.	
3rd of Baudelocque 4th of Baudelocque	1st Intermediate diagonal.	
	2nd Inclined or incomplete	1st Frontal. 2nd Mental (near the front of the neck).
	3rd (One cheek only) Malar.	
3rd of Baudelocque 4th ,,	1st Intermediate diagonal.	
	2nd Arm protruding.	
3rd ,, 4th ,,	3rd Acromioon in the centre (near the side of the neck).	
	4th Elbow in the centre (near the chest, back or abdomen).	

The pelvic extremity of the child like that of cephalic may present itself at the brim of the pelvis in many directions. Hence the numerous and arbitrary divisions adopted by authors. Those presentations of the child, however, should only be recognised as cardinal, which necessarily occasion peculiarity in the mechanism by which the labour is naturally terminated, or which furnish rules necessary to be observed in the performance of manual or instrumental operations. All other presentations should be considered as intermediate to the cardinal ones, and subjected to the same rules as those of the presentations which they resemble most. In conformity with this view, Duges the Editor of Lachapelle, proposes to make only one genus of the presentations of the pelvic extremity.

	Species.	Varieties.	
3rd Genus. First knees & buttocks.	1st Back to the left. 2nd ,, right. 3rd ,, forwards. 4th ,, backwards.	1st Diagonal.	near the pubes (*the genitals before the thighs*). near the abdomen (*before the legs*). near the loins (*coccyx*). near the hip and external part of the thigh, right, left, (*one buttock*).
		2nd Inclined.	
		3rd Imperfect or mixed.	One foot, one knee. The feet and buttocks, one foot and the buttocks. One foot and one knee.

Lachapelle says, I have met with some presentations of the vertex, where the occiput was far removed from the centre of the pelvis, and others, where the parietal bone occupied the centre itself. I have very distinctly touched the chest in most cases where the shoulder advanced first. I have been able to reach the loins or the hips, or the lower part of the abdomen in certain breech presentations, but such cases are not really to be regarded as presentations of the ear or neck, of the chest or back, or of the abdomen or loins. These parts, indeed, never advance foremost into the pelvis so as to constitute the presenting part in a child of average size, and which has reached the full term. Before the seventh month, when the fœtus passes doubled through the pelvis, it has occasionally been observed. Lachapelle in all her experience met with no instance of presentation of the neck or thorax, properly so called, nor of the back, abdomen, sides or loins, at the full time, and the experience of the late and the present Dr. Merriman, in a practice of more than 20,000 cases, confirms this conclusion. Finally, it is to be observed, that original presentations are occasionally complicated, and this especially happens in a wide pelvis, by the accidental prolapsus of an arm or foot, or of the funis umbilicalis.

Figs. 1 & 2. It has been before remarked that in a well formed pelvis, the fronto-cotyloid presentation (third and fourth oblique presentations of the vertex, Pl. 34) does not generally delay labour to any injurious extent, nor require any manual alteration of the head to facilitate its expulsion. To quote the words of Naegele, "these species of labours can be completed by the natural powers, under the most usual proportions, in the same time, with the same expense of strength, and without greater difficulty than when the head takes the most common position." (Rigby's Translation). In those exceptional cases here represented, where the face is turned to the pubes, the perineum is, indeed, put greatly on the stretch and great attention will be required to prevent its laceration. This distention may, however, be much relieved by passing up the finger, as advised by Dr. Collins, and freeing the chin, so as to favour its escape from under the arch of the pubes.—J. S. S.

PLATE XL.

MECHANISM OF NATURAL LABOUR: SECOND POSITION OF THE FACE (THE CHIN TO THE LEFT ILIUM).

(HALF SIZE).

Figure 1.

First stage.—The diameter drawn from the forehead to the chin, is parallel to the transverse diameter of the brim. The chin corresponds to the left ilium, and the vertex is directed to the right ilium. The face is entering the pelvic cavity, and will retain the same position, until it is completely within it.

Figure 2.

Second stage.—The head of the fœtus, after having reached the bottom of the pelvic cavity, has made a turn, which has brought the chin from left to right, behind and beneath the symphysis pubis, whilst the vertex has turned from right to left, into the hollow of the sacrum, where it is now lodged. To enable it to make its exit, the head must be flexed, by which the chin, mouth, nose, forehead, vertex and occiput will successively appear at the vulva, the occiput making its exit last.

Remarks.—In this presentation, the chin of the child is separated from the chest and the head extended backwards *before or during* the passage of the pelvis. This position tends to retard the labour in the manner noticed in the remarks on the mechanism of parturition; but the delivery is usually completed by the unassisted efforts of nature. Much caution should be used in making vaginal examinations, so as to prevent the eyes and mouth of the child from sustaining injury. The face of the child is usually much swollen and dark coloured at birth, but commonly regains its natural condition in a few days. Retention of urine not unfrequently accompanies this presentation, owing to pressure on the neck of the bladder. If present, the urine should be carefully drawn off by the catheter.

Where the pelvis is large and the hollow of the sacrum more capacious than usual, the head of the child occasionally executes that movement of extension on the spine, while entering the brim, or within the cavity of the pelvis, which does not ordinarily take place till the third stage. In this manner what was originally a vertex presentation at the brim, becomes changed to a face presentation at the outlet, and the child is expelled through the vulva in that position. When the head presents at the brim in the first or second oblique position, if by any cause* the occiput is prevented from descending, or the forehead experiences unusual facilities in entering into the cavity of the pelvis, the head turns on its transverse diameter, and the forehead followed by the face, sweeps over the sacro-iliac synchondrosis, and occupies the pelvic cavity, while the occiput still remains stationary at the brim; in other words, the oblique position of the vertex becomes converted into either the first position of the face, that namely, where the chin is turned towards the right side of the pelvis, or into the second presentation of the face, or that where the chin is turned toward the left of the pelvis, according as the occiput was originally directed to the left or right side. Dr. Merriman has twice observed the presentation of the face converted during the progress of the labour into a natural presentation. (Synopsis, p. 46).—J. S. S.

* The Editor has witnessed the conversion of a vertex into a face presentation, in a case where the impediment to the descent of the head, was occasioned by a tumour firmly attached to the cervix uteri, and to the side of the pelvis near the upper and left part of the sacrum. The injury occasioned by the compression of the uterus between the hard tumour and head of the child proved fatal. In the third of five former labours, during which the tumour was unattached to the pelvis, the labour was lingering, but terminated by the exhibition of ergot, and with a rapid recovery, the existence of the tumour was then unknown. The fourth labour was lingering and instrumental and the recovery tedious and quite unexpected, the tumour could be plainly felt. Before the last pregnancy it became adherent to the upper part of the pelvis, and could not be felt. The length of the labour, and the death of the child led to the use of the perforator. The induction of premature labour was proposed, but rejected in the fourth pregnancy from a misconception in the woman's mind in regard to the effects of the operation on the child, and the proposal led her to change her accoucheur.

2.me Position de la Face.

Fig. 1. Premier temps.

2.me Position de la Face.

Fig 2. Deuxième temps.

Dessiné d'après nature par Emile Beau

publié par Germer Baillière à Paris.

Lith. de Fourquesour

1.ère Position des fesses.

Fig. 1.re Premier temps.

2.e Position des genoux.

Fig. 2. Premier temps.

dessiné d'après nature par Emile Beau. Paris, publié par Germer Baillière. Imp. Lith. de Fourquemin.

PLATE XLI.

MECHANISM OF LABOUR, IN THE DIFFERENT PRESENTATIONS OF THE NATES AND LOWER EXTREMITIES: 1ST. THE FIRST POSITION OF THE BREECH (SACRUM TO THE LEFT ILIUM): 2ND. SECOND POSITION OF THE KNEES (TIBIA TO THE RIGHT ILIUM).

(HALF SIZE).

[It has not been thought necessary, to figure the whole of the positions, in which the pelvic extremity of the child may present. Only one illustration is given of each of the four positions in which the breech, knees and feet may offer at the brim. If the four positions represented are thoroughly studied, all the rest will be easily conceived and understood.]

Figure 1.—FIRST POSITION OF THE BREECH.

First stage.—In this position, the hips of the fœtus are placed parallel to the antero-posterior diameter of the brim: the left hip being towards the pubis of the mother, and the right one towards the sacrum. The back of the fœtus is in contact with the left side of the uterus, while the legs and thighs, which are extended on the anterior part of its body, are in contact with the right. The head corresponds to the fundus.

Figure 2.—SECOND POSITION OF THE KNEES.

First stage.—In this position, the transverse diameter of the knees is parallel to the antero-posterior diameter of the brim, the right knee being towards the pubis of the mother, and the left knee towards the sacrum. The anterior part of the legs is directed towards the right ilium. The two feet crossed and in apposition with the nates of the fœtus, are in contact with the right iliac fossa. The back of the fœtus corresponds to the right half of the uterus, whilst the anterior part of the thighs, the abdomen and the whole of the anterior surface of the fœtus are in contact with the left half. The head, which is much bent down and towards the left side corresponds to the fundus of the uterus, which presents an example of the left lateral obliquity.

REMARKS.—The frequent occurrence of breech and footling presentations, and the danger to which they expose the life of the child, render their proper management an object of great practical interest. From injudicious attempts to hasten or assist the passage of the nates through the vulva, the child often perishes, the cord being compressed between the head of the child and the parts of the mother, during the subsequent passage of the vertex. This is owing to the soft parts being badly prepared to admit the speedy passage of the head. To guard against this danger, the nates should always be permitted to pass slowly and unassisted through the external parts, so as gradually and perfectly to dilate them, and thereby facilitate the passage of the head. This presentation may not unfrequently be diagnosed before the labour commences, by the action of the fœtal heart being heard *most distinctly* near the umbilicus of the mother. In this and indeed in all instances, in which a præternatural presentation is suspected, the practitioner should take more than usual care not to rupture the membranes, because the more relaxed and dilated the soft parts are before they give way, the more favourable will be the result, and a descent of the umbilical cord, will be less likely to take place, a circumstance which occurs far more frequently in feet, than in other presentations. When the nates are born, the pulsation of the cord should be minutely watched, and if the pulsation becomes feeble or ceases, the birth ought to be accelerated by every possible manipulation, lest the child be asphyxiated by the suspension of the respiratory function of the placenta. The delay of even a few minutes is occasionally fatal, where the umbilical circulation is completely interrupted. When the child is expelled with its abdomen towards the pubes, it should be gently, but sufficiently turned round to direct the vertex into the oblique diameter of the brim, the most favourable position for its passage through the pelvis. The perineum should be carefully guarded.

The whole of the presentations of the nates and lower extremities, may for practical purposes, be divided into two varieties. The 1st and most frequent, is where the back of the child inclines towards the abdomen of the mother; the 2nd where the back of the child inclines towards the sacrum of the mother. The back of the child does not in either case look directly forward or backward, but the greatest breadth of the child, passes into the pelvis in the line of one of the oblique diameters of the brim. When the breech is the presenting part, one of the ischia (usually the most anterior or that nearest to the pubes) descends lower than its fellow, and forms the presenting part. The breech is usually transmitted through the outlet, with one hip directed obliquely towards the pubes, and the other toward the sacrum. The shoulders pass the brim, with their breadth in the line of the oblique diameter; but in passing the outlet they have their position changed, being then inclined, the one towards the pubes, and the other towards the sacrum: by this inclination the head is brought through the brim, with the forehead towards the sacro-iliac synchondrosis, and the occiput towards the opposite acetabulum. The shoulders having been expelled, the face turns into the hollow of the sacrum, the chin is depressed towards the chest, and so escapes posteriorly; and lastly the vertex passes out from under the pubes.

In the second variety where the face of the child is at first inclined anteriorly, a complete turn is, according to the observations of Naegele, subsequently effected in a great majority of instances, so as to bring the face into the hollow of the sacrum, as in the first variety. Sometimes, however, the head instead of being flexed is extended, the occiput depressed upon the nape of the neck, and the vertex turns into the hollow of the sacrum. The chin than rests upon the pubes, and the occiput first passes out posteriorly. In foot and knee presentations, the shoulders and head pass in a similar manner.

—J. S. S.

PLATE XLII.

MECHANISM OF LABOUR, IN THE DIFFERENT PRESENTATIONS OF THE BREECH AND LOWER EXTREMITIES: THE THIRD POSITION OF THE FEET (HEEL TO THE PUBIS) FOURTH POSITION OF THE BREECH (SACRUM TO THE SACRUM).

Figure 1.—THIRD POSITION OF THE FEET.

First stage.—In this position, the heels of the fœtus correspond to the pubis of the mother: the toes are turned towards the sacrum. The back of the fœtus is in contact with the anterior surface of the uterus. The anterior part of the legs, the knees, arms, and all the front of the body of the fœtus are turned towards the posterior wall of the uterus. The left side of the fœtus is directed towards the right side of the mother, and its right side to her left. The head is covered by the fundus of the uterus.

Figure 2.—FOURTH POSITION OF THE BREECH.

First stage.—In this position, the hips of the fœtus are placed parallel to the transverse diameter of the pelvis. The right hip and right side of the fœtus correspond to the right side of the mother. The back of the thighs and legs, and the anterior part of the body of the fœtus, are situated towards the anterior wall of the uterus. The vacum and back of the fœtus are placed in contact with its posterior wall. The head is bent forward and covered by the fundus of the uterus, which is in a state of anterior obliquity.

4.e Position des fesses.

Fig. 2. Premier temps.

3.e Position des pieds.

Fig. 1.re Premier temps.

Dessiné d'après nature par Emile Beau.

Paris, publié par Germer Baillière.

Imp. Lith. de Fourquemin.

1.re Position des fesses.

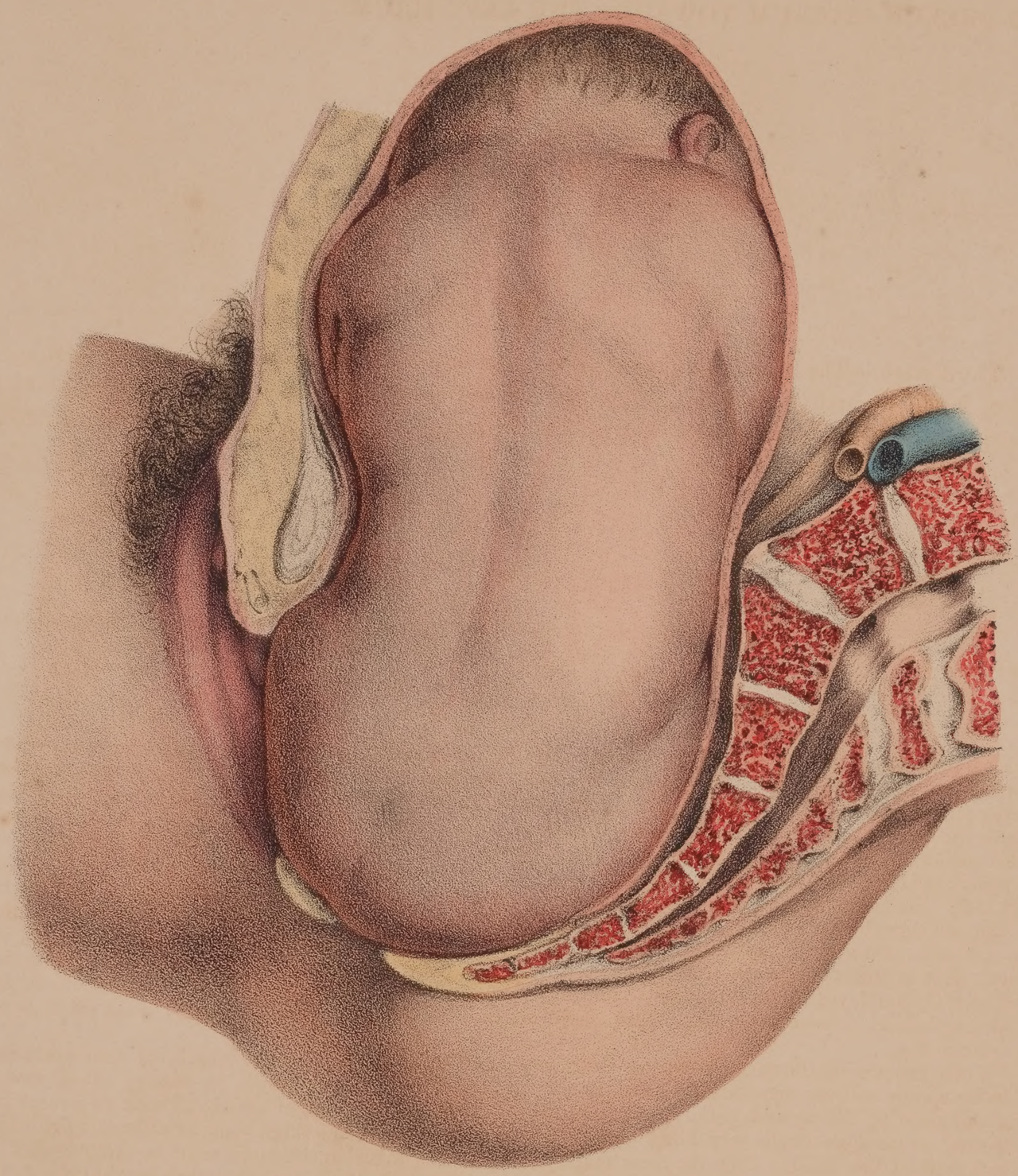

Fig. 1.re Deuxième temps.

1.re Position des fesses.

Fig. 2. Troisième temps.

Dessiné d'après nature par Emile Beau.

Publié par Germer Baillière à Paris.

Lith. de Fourquemin.

PLATE XLIII.

MECHANISM OF LABOUR, IN THE FIRST POSITION OF THE BREECH (SACRUM TOWARDS THE LEFT ILIUM).

(HALF SIZE.)

Figure 1.

Second stage.—The breech has been forced through the brim by the contractions of the uterus, and is situated in the cavity of the pelvis. The left hip having come below the symphysis pubis, gets into the outlet, and is about to show itself at the vulva. The right hip, situated in the hollow of the sacrum, is still on a level with the left hip. The body of the fœtus will undergo a curve for the purpose of assisting the exit of the hips; the concavity of this curve will be towards the pubis of the mother and will take place in the left side of the fœtus, and its convexity in the right side. The relations of the fœtus are not changed, and are still the same as those mentioned in the first stage of this first position of the breech. (Pl. XLI. fig. 1).

Figure 2.

Third stage.—The breech has passed through the outlet and the vulva. The left hip first appeared at the orifice, below the arch of the pubis, whilst the left had to traverse the inclined plane formed by the sacrum, os coccygis, and perinæum, before it arrived at the orifice. The trunk has been curved considerably towards the left side.

Remarks.—In this and the following plate are represented the several stages of that mechanism by which the body and head of the child are naturally expelled, when the long axis of the fœtus presents itself at the mouth of the uterus with its pelvic extremity. Every stage of this species of labour should be studied with the greatest care, not only for its own sake, but because this kind of labour is imitated as far as possible in the method of forced delivery, which is practised after the operation of version, or turning the child in the womb has been accomplished. The softness of the parts which compose the pelvic extremity of the child admit of more easy moulding and adaptation during the transit through the pelvis, and there is consequently less need than in vertex presentation of the child changing its direction, so as to bring its long and short diameters in successive correspondence with those of the brim and outlet. The head, however, to ensure its easy passage, must observe a progress analogous to that which takes place when the vertex traverses the pelvis as the presenting part. When the mechanism of this kind of labour is clearly understood, great assistance may be given to the passage of the head by directing and preserving it in the most favorable position either during the occurrence of uterine pains or when using extractive force. The following directions and remarks chiefly taken from Collins' Practical Midwifery, (p. 41), comprise, nearly every circumstance connected with these presentations, that is practically useful. When the breech is passing through the external parts, guard the perineum carefully as there is considerable danger of laceration. When the breech and inferior extremities are expelled, Denman and others direct great attention to be paid to the position which the child holds with regard to the mother. If the back of the child is not turned to the abdomen of the mother, the practitioner is instructed to turn the child so that the hind part of its head may be turned towards the pubes. It is very desirable that the child should pass in this position as it renders the delivery of the head much less difficult; but where there has been no interference with the previous part of the labour, the attendant will rarely find it necessary to change the child's position; the breech naturally making the turn above alluded to in its passage. The observations of Naegele are confirmatory of the natural tendency to make this turn. When the labour has advanced so far, it is well to draw down gently a portion of the umbilical cord to ascertain the state of its circulation, and also to prevent its being severely stretched. If pulsating strongly, we should not hurry the remainder of the delivery, but cautiously assist the uterine effort so as to allow the womb gradually to empty itself; but if its pulsation is feeble, the child must be brought away as expeditiously as is consistent with the mother's safety, lest it should be lost through asphyxia.

In footling presentations, avoid all interference until the hips are completely expelled. Attention to this is, if possible, of more importance than in breech cases. The greater safety to the child in the latter case results from the breech being so nearly of a size with the head, and consequently dilating the parts so much better than the feet, that the shoulders and head follow with comparative ease, and the pressure on the funis is thus greatly lessened. (See Remarks on Pl. XLIX).

In bringing down the arms, avoid injuring them and also the soft parts of the mother. Free that one first, which offers the least resistance, directing it over the face and chest by means of the finger placed in the bend of the elbow. In getting down the arm next the bed, which is generally the right, the child's body should be well elevated so as to afford more room. Having proceeded so far, the forefinger of the left hand is to be passed up and introduced into the mouth so as gently to depress the chin on the sternum; but in doing so, no extracting force whatever is to be used, as that would endanger fracture or dislocation of the jaw; or might inflict injury on the inside of the mouth. The extracting force is to be wholly applied by the right hand to the back part of the neck and shoulders, at the same time inclining the body towards the pubes. (See Fig. 2, Pl. 50). In some difficult cases advantage is derived from pushing up the head a little, so as to alter its position.

Should there be any considerable obstruction to the delivery of the head, the use of *violence* is by no means justifiable. The soft parts of the mother will be sure to suffer from such a mode of proceeding, and on the child's part nothing is to be gained, as it is already destroyed from pressure on the funis, sustained while the ordinary efforts have been diligently but unsuccessfully employed for its extraction. The only safe plan under these circumstances, is to lessen the head by making an opening behind one or both ears. This expedient is, however, *very seldom* necessary, if the pelvis is not much under the natural size.

Where the uterine efforts are from any cause inadequate to the expulsion of the breech, or some occurrence takes place rendering speedy delivery necessary, the breech may almost invariably be delivered, by passing one or two fingers into the groin and assisting during each pain, unless great deformity exists. The use of the blunt hook or forceps is to be strongly deprecated, as such practice is very likely to be followed by fracture of the thigh bone, or at least by considerable injury to the soft parts of the child. Even the force employed with the finger in the groin must be exerted with caution. It is always prudent to examine the child's limbs and joints soon after its birth, to discover if they have sustained any injury, as in such cases early and proper attention will generally prevent any permanent bad effects. In cases of extreme deformity desperate measures are necessary, and instrumental delivery unavoidable, but this is rare, for Dr. Collins has had but one instance out of between 24,000 and 25,000 deliveries, that required any instrument under such circumstances.

"The danger to the child," says Dr. Collins, "where the breech or feet present (provided the pelvis be well formed, and the labour not hurried by officious interference) is not by any means so great as is generally imagined." And this entirely accords with the Editor's experience. "The great mortality in footling and breech presentations, is comparatively little owing to any difficulty experienced in the actual delivery of the child, but," says Dr. Collins, "must be referred to causes operating previous to the setting in of labour." Dr. C. is not prepared to say "whether the position of the child in these cases has any share in causing so very large a proportional number to be expelled prematurely, or in producing the child's death some time previous to labour, so as to account for the putrid condition in which it is so frequently expelled."—J. S. S.

PLATE XLIV.

MECHANISM OF LABOUR, IN THE FIRST POSITION OF THE BREECH (SACRUM TO THE LEFT ILIUM).

(HALF SIZE.)

Figure 1.

Fourth stage.—The lateral curve of the trunk has continued during the disengagement of the body. The shoulders entered the brim in one of its oblique diameters. The right shoulder was situated in front of the left sacro-iliac symphysis and the left shoulder behind the right acetabulum. The right shoulder has appeared in front of the perineum, after passing over the posterior wall of the pelvis, whilst the left shoulder has remained fixed behind the right acetabulum. The head is entering the cavity of the pelvis, and will rotate in such a manner, as to bring the occiput under the pubis, and the face into the hollow of the sacrum, as soon as the left shoulder has disengaged itself.

Figure 2.

Fifth stage.—The trunk and shoulders of the fœtus are completely disengaged; the head alone remains in the pelvis; the rotation has taken place. The face and vertex will come out in front of the perineum, and the occiput will make its exit the last under the symphysis pubis.

Remarks.—The following tables are given to illustrate the comparative frequency of the different positions in which the child presents. The data are taken partly from large hospital reports, and partly from dispensary, parochial, and private practice, with the view of ensuring a more correct approximation to the truth. In the opinion of the Editor, no circumstance is more calculated to ensure the onward and rapid progress of the Obstretric Art to perfection, and of its profession in public estimation, than the employment of accurate statistical records, in the place of loose conjecture and dogmatic assertion. The tables have been constructed from facts recorded in the Pratique d'Accouchmens of Lachapelle, in the Practical Midwifery of Dr. Robert Collins, in the Synopsis of Dr. Merriman, in the Manual of Midwifery, and in the Parochial Reports, published in the Medical Gazette, by Dr. James Reid, and in the Obstetric Medicine and Surgery of Dr. F. H. Ramsbotham and Mr. Lever's paper in Guy's Hospital Reports, April 1841. It will be seen that Lachapelle enters most fully into the variety and relative frequency of presentations, but neither distinguishes between their occurrence in single and plural births, nor between those which take place in births that are premature, and at the full term. As, however, præternatural presentations are more frequent in twin labours and premature births, than in single births and labours at the full time, these circumstances among others have been kept in view, in framing the 3rd, 4th and 5th tables. The remaining tables, it is hoped, will furnish additional information that is both curious and practically useful in twin cases.

TABLE I.

Authority.	Women.	Single births.		Twins.	Triplets.		Children.
Lachapelle.*	37,441	36,992		444	5		37,895
Presentations of Baudelocque.	1st order	2nd	3rd	4th	5th	6th	Total
Vertex.	27,443	7,512	„	276	144	„	35,375
Breech.	502	316	7	16	„	„	841
Foot.	347	175	6	10	„	„	538
Knee.	7	3	1	„	„	„	11
Face.	„	„	99	76	„	„	175
Shoulder.	„	„	88	98	„	„	186
Undetermined.	Delivered before their arrival at the hospital.						769

TABLE II.

RELATIVE PROPORTION OF SINGLE AND PLURAL BIRTHS AND OF NATURAL AND PRÆTERNATURAL PRESENTATIONS.

Authority.	Women	Twins	Triplets	Quartets	Children	Face	Face to Pubes	Breech	Foot	Shoulder	Placenta prævia
Professor Boer, Vienna Lying-in Hospital.	9,589	121	1	„	9,712	73	„	184	68	51	„
Dr. Josp. Clarke, Dublin Lying-in Hospital.‡	10,387	184	3	1	10,580	44	17	61	184	48	4
Dr. Robt. Collins Dublin Lying-in Hospital.	16,414	240	4	„	16,654	33	17	315	187	40	11
Dr. Bland, Western General Dispensary	1,897	„	„	„	„	„	5	36	18	8	„
Dr. James Reid, Parochial Infirm. St. George's and St. Giles.	3,250	„	„	„	„	15	„	79		18	3
Dr. Merriman, Private Practice.	2,947	39	1	„	2,988	10	44	78	40	19	7
Mr. Lever, Guy's Hospital Lying-in Charity.	4,664	33	„	„	4,695	24	„	59	29	15	14

* The transverse or direct presentations of the vertex have been classed by Lachapelle with those oblique presentations which they most nearly resemble. They are intermediate in frequency between those of the fourth and fifth orders of Baudelocque (the left and right fronto-cotyloid) and the occiput is more frequently directed to the left than to the right side. The varieties also indicated in the tabular view of presentations in the remarks on Pl. XXXVIII. both intermediate and inclined have also been united to those kinds which they most nearly resemble. It should have been observed that the presentations in that classification are arranged according to the order in which they most frequently occur, with the exception of those of the knee which could not well be separated from presentations of the breech and feet.

‡ The report of Dr. Joseph Clarke only comprizes the præternatural presentations in single births. The presentations of twin cases are imperfectly recorded.

TABLE III.

RELATIVE PROPORTION OF PRESENTATIONS IN 26,391 SINGLE BIRTHS.

Authority.	Women	Face	Face to pubes	Breech	Foot	Arm or shoulder	Placenta prævia
Dr. Joseph Clarke, Dublin Lying-in Hospital.	10,199	44	17	61	184	48	4
Dr. Robert Collins, Dublin Lying-in Hospital.	16,192	33	12	242	127	33	11

TABLE IV.

RELATIVE PROPORTION OF PRESENTATIONS IN 225 TWIN CASES, DISTINGUISHING THE PRESENTATION OF THE FIRST AND SECOND CHILD.

Authority.	Women	Children	Presentation	Head	Face to pubes	Breech	Foot	Arm or shoulder	Placenta prævia
Dr. R. Collins*	225	450	1st child	161	2	38	23	1	„
			2nd child	143	3	33	39	7	„
			Total	304	5	71	62	8	„

TABLE V.

THE RELATIVE PROPORTION OF PRÆTERNATURAL PRESENTATIONS IN SINGLE AND PLURAL CHILDREN, AND IN CHILDREN BORN PREMATUELY AND AT FULL TERM.

Authority. Dr. R. Collins	Single births. 16,192		Twins. 450		Total of children 16,642
	Premature	Full term.	Premature	Full term.	
Breech	40	202	13	60	315
Foot	36	91	12	48	187
Shoulder	3	30	„	7	40

TABLE VI.

THE COMBINATION OF PRESENTATIONS OBSERVED IN 578 TWIN CASES.

Authority.	Twin cases	Both head	One head & one breech or lower extremity.	Both breech or lower extremity.	One head one transverse	Onebreech one transverse	Both transverse
Dr. F. H. Ramsbotham	318	141	131	29	14	2	1
Dr. Robert Collins‡	225	107	88	22	5	3	„
Mr. Lever	33	16	12	3	2	„	„
Total	578	264	231	54	21	5	1

TABLE VII.

RELATIVE PROPORTION OF PLURAL TO SINGLE BIRTHS.

Authority	Women	Twins	Triplets	Quartets
Lachapelle	37,441	444	5	„
Ramsbotham	29,489	318	1	„
Collins	129,172	2,062	29	1
Brititsh Lying-in Hospital, Brownlow-st. Drury-lane‖	33,108	391	1	„

—J. S. S.

* Dr. Collins in his admirable work, records 240 twin cases, as occurring in a total of 16,414 women, delivered during his mastership, but in fifteen cases, the presentations are not given or only partially stated, so that they are not adapted for the purposes of this table. In several of these instances the rapidity of the birth, and in two the blighting of one fœtus at an early age precluded their observation.

‡ It is worthy of remark that the vertex presented in every one of the three instances of twin conception, recorded by Dr. Collins, where one fœtus was blighted at an early period, but retained in the uterus till the other reached maturity and was born alive. (Practical Midwifery, p. 317, 1836). The vertex presented in a similar instance, recorded by the Editor in his remarks on the frequent retention of the ovum after the death of the fœtus. (Practical Observations on Abortion, p. 38, 1840). Dr. R. Lee has also shown him the placenta of a triplet conception which he possesses, to which are attached the fœtuses of two ova that had perished early, but had been retained in the uterus till the other child reached the full term.

‖ From its foundation to 31st Dec. 1821.

1.re Position des Fesses.

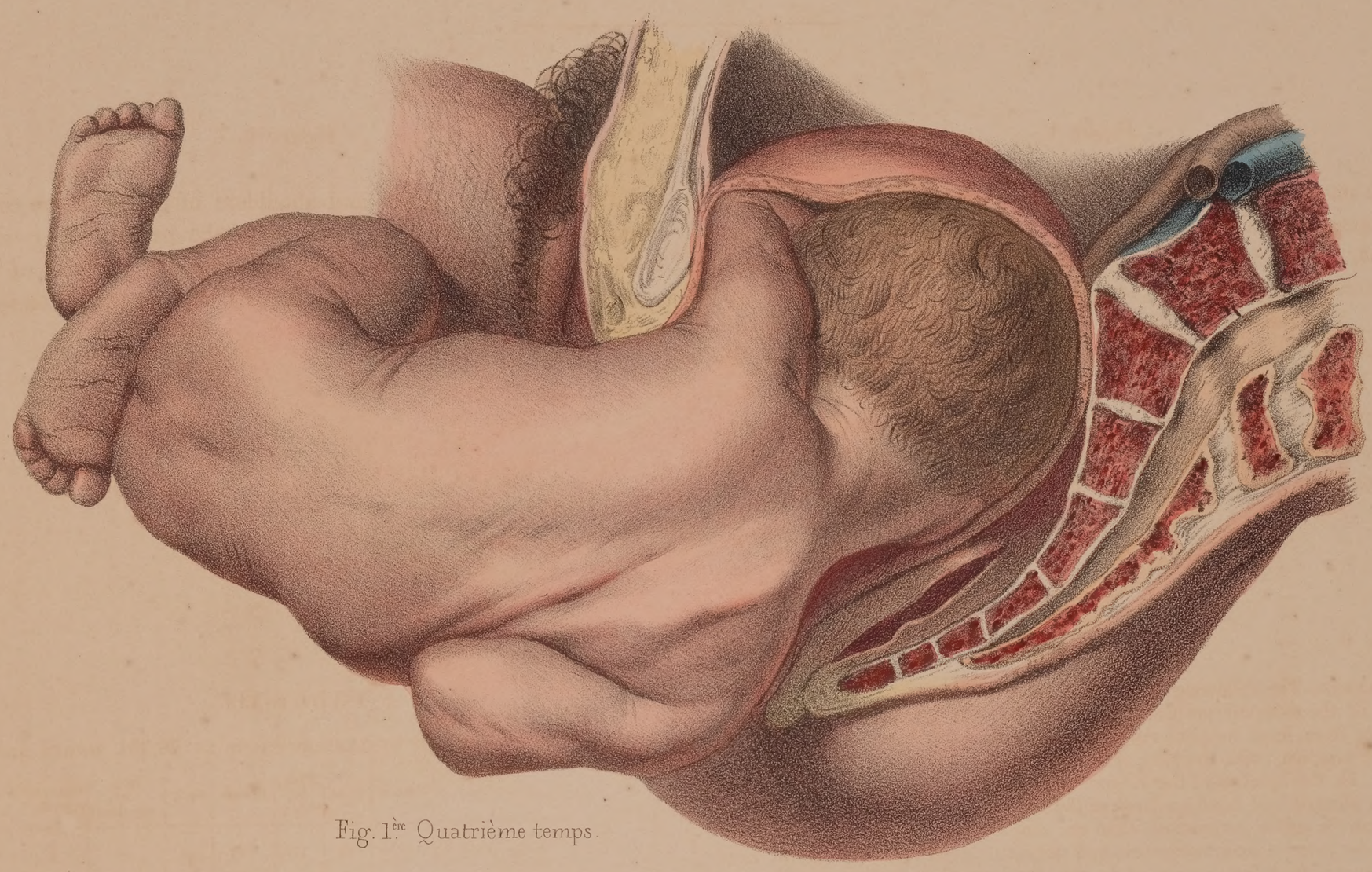

Fig. 1ère Quatrième temps.

1re Position des Fesses.

Fig. 2. Cinquième temps.

Dessiné d'après nature par Emile Beau. Paris, publié par Germer Baillière. Lith. de Fourquemin

Version dans la 1re position oblique du sommet.

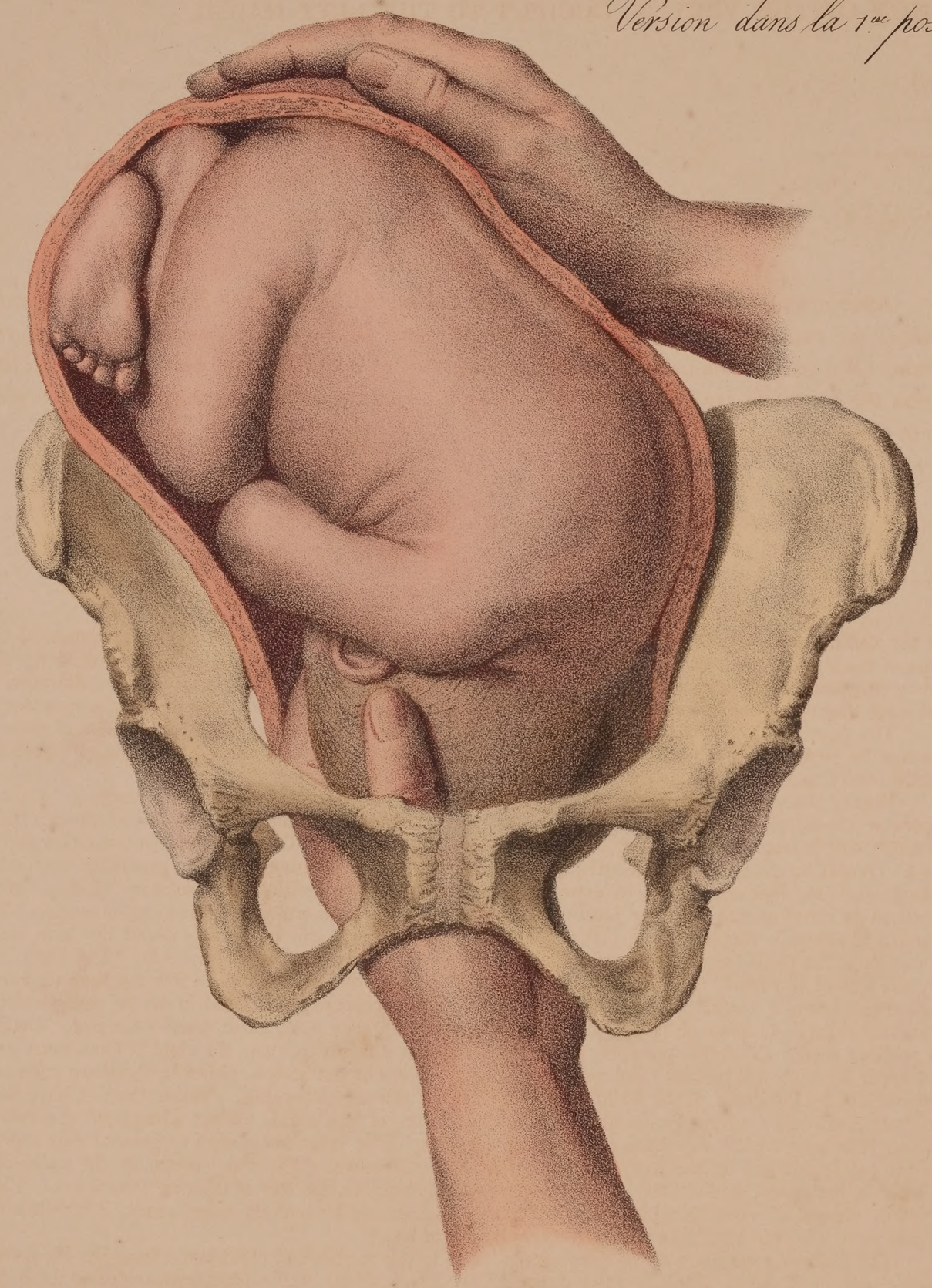

Fig. 1. Premier temps.

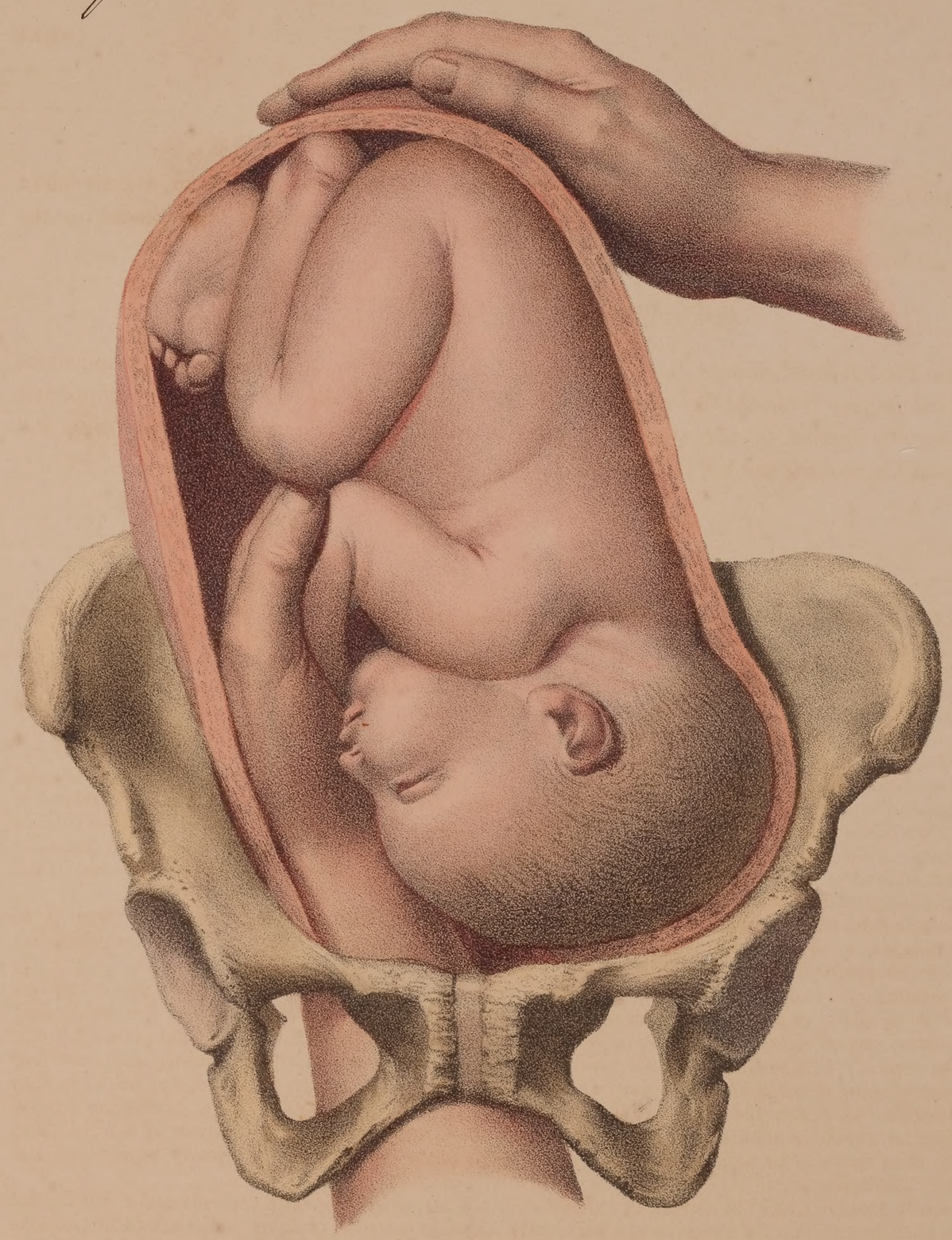

Fig. 2. Deuxième temps.

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PLATE XLV.

ARTIFICIAL LABOUR: TURNING IN THE FIRST OBLIQUE POSITION OF THE VERTEX (OCCIPUT TO THE LEFT ILIUM).

(HALF SIZE.)

[In all cases in which turning is required, it is necessary, after placing the female in a convenient position, to begin by fixing the uterus with the hand that is free; this hand is always to be placed on the abdomen so as to support the fundus of the uterus.]

Figure 1.—FIRST STAGE.

In this presentation the left hand should be introduced, in a state between pronation and supination, along the right side of the pelvis; it should be passed up in the direction of the right sacro-iliac symphysis until the palm of the hand is applied to the vertex, so that the head may be raised from the brim, and carried back as far as possible towards the left iliac fossa.

Figure 2.—SECOND STAGE.

After raising the head, the hand must be insinuated between the left side of the head and the posterior wall of the uterus, and passed up along the left side of the fœtus, care being taken to recognize each of its parts, till it reaches the feet. During the whole of this time, the right hand which is on the abdomen, should press the fundus towards the right side, so as to bring the feet, as much as possible, towards the hand which is to grasp them.

REMARKS.—Version is that manual operation by which the footling presentation is substituted for the vertex or transverse. As extracting force can be applied in footling presentations, either during the presence or in the absence of uterine contraction, it gives the accoucheur an entire control over the process and duration of labour. Artificial delivery by version is therefore practiced to hasten the termination of labour, where the safety of the mother and child are both endangered by further delay. It is now resorted to chiefly: 1st. In twin cases, where the birth of the second child is delayed beyond a reasonable time. 2ndly. In cases of rupture of the uterus or vagina, where the child recedes into the cavity of the abdomen. 3rdly. In cases of placenta prævia where the after-birth is completely placed over the mouth of the uterus, and 4thly. In those cases where the placenta is only partially adherent to the cervix and in all cases of accidental hæmorrhage where puncturing the membranes and evacuation of the liq. amnii fails to arrest the loss of blood. Version has also been practised, where the labour was complicated by convulsions, by prolapsus of the umbilical cord and where a tumour has encroached upon the cavity of the pelvis, but in these cases, its adoption as a means of procuring delivery is not generally advisable. Its employment where the child is placed transversely in the uterus will be more appropriately considered in the plates, illustrating the varieties of arm presentations.

M. Moreau has illustrated this obstetric operation at great length, devoting no less than eight plates (16 figures) to the elucidation of its performance, a sufficient testimony of its practical worth and importance as a means of accomplishing delivery. The study of the two principal varieties of version, 1st. That where the vertex of the child presents, and 2ndly. That where the shoulder presents, will enable the practitioner to conceive and adapt the operation to all those minor varieties which a different position of the child, or an irregular placing of its limbs may occasion. The present and five succeeding plates represent the successive stages, eleven in number, of delivery by version where the head of the child presents in the first oblique position of the vertex. The pushing aside the head, the carrying the hand within the uterus, and searching for the feet, the seizure and bringing down of both feet simultaneously or first of one and then the other, the actual version or revolution of the child within the uterus, the extraction of the feet and nates, the means adopted for preventing tension of the umbilical cord, the extraction of the shoulders, the bringing down of the arms and lastly the manner of directing and assisting the passage of the head through the pelvis and vulva. These steps of the operation are all clearly represented and minutely, though concisely described.

The essential conditions for turning a child in utero with safety to the mother, where the vertex presents and a well formed pelvis exists, are two. 1st. That the orifice of the uterus be in a sufficiently dilated or dilatable state to readily admit the entrance of the hand, for a forcible entrance into the uterus whilst its orifice is rigid, is *never justifiable*, except in some rare and very alarming cases of hæmorrhage. 2ndly. That the head of the child has not already cleared the orifice of the uterus and become firmly fixed in the brim of the pelvis. The presence of the waters and the absence of uterine contraction greatly favour its accomplishment. So long, indeed, as the uterus remains distended with liq. amnii, the operation is easy, but when the case is unfortunately not seen or attended to, till after the waters are discharged and the walls of the uterus have closely contracted around the child, it then becomes one of danger and difficulty, and these are increased in proportion as uterine contractions diminish the volume and bring the inner surface of the viscus in close apposition with the body of the child. The highest degree of difficulty, however, is experienced in consequence of the expulsive efforts of the uterus benumbing and resisting the advance of the hand, or in some instances preventing its entrance altogether. The preliminary steps consist in placing the woman in the most favorable position, in emptying the bladder where distended, in fixing the uterus, and in selecting and preparing the arm to be employed in the operation. The position usually chosen in this country is that of making her lie close to the edge of the bed on her left side, and with the knees drawn upwards; but this may be varied with advantage for any position which will give the operator greater facility. Where, indeed, the woman is disposed to resist, the placing her so as to rest on her elbows and knees will be found a very effectual mode of lessening and controlling opposition. The uterus may be fixed in the first instance, either by the hands of assistants or by the unemployed hand of the operator placed upon the outside of the abdomen; but so soon as his hand has entered the cavity of the uterus, he should always steady the uterus with his own hand, because it will more readily cooperate with the movements of the hand within. The choice of the arm must be regulated by the position of the child within the uterus. When the abdomen of the child is opposed to that of the mother, the right arm of the operator will reach the feet with more facility, but if the child looks, as it most commonly does, to the vertebral column, the left will be more convenient. Either arm may, however, be employed, and in all cases where the position of the child is doubtful, that one should be selected over which the operator has most control.

The operation may be conveniently separated into five parts: 1st. The introduction of the hand into the vagina. 2ndly. Its passage through the os uteri. 3rdly. The searching after and seizing the feet. 4thly. The turning or evolution of the child; and 5thly and lastly. Its extraction.

During the whole process, the vital properties of the textures to be dilated and traversed by the hand and arm of the operator should constantly be borne in mind and no dilating force should ever be employed incompatible with the integrity of the thin and delicate vagina or of the irritable and resisting uterus. The hand introduced either in the form of a cone or so as to present its least thickness to the transverse diameter of the vulva, is to be gradually insinuated into the vagina by gentle and oft repeated efforts to extend the fingers, alternated with slight rotatory motions of the wrist, and not by extensively rotating the hand or pushing onwards with the fore-arm. The hand so introduced into the vagina is to be carried forwards in the line of the pelvic axis and passed through the os uteri, without the least violence, and during the intervals of the pains, so as to preserve the membranes unbroken, as long as possible. The hand is now to be passed up by the side of the head, till one or both feet are felt through the membranes which are then to be ruptured, and the feet seized and brought down. If the membranes are already ruptured the hand is to be carried along the abdomen of the child on which it is, as much as possible, to lie at rest during each pain, till it reaches the feet. Both feet should be seized if possible where the vertex presents, otherwise it will be difficult to turn the child. Care must be taken not to mistake an upper for a lower extremity, and not to injure the parietes of the uterus, either by the sharp nails or hard knuckles of the operator or by the limbs of the child, especially during the act of turning. When the feet have been brought down, the highest authorities advise gentle and cautious extraction of the child, taking advantage of uterine pains when present, rather than trusting its expulsion to the natural efforts. The tractions should be gradual and slow, and made in the line of the pelvic axis and on the parts of the child nearest the vulva. The bony parts, as the malleoli, the knees and pelvis, should be embraced, and not the soft parts, as the abdomen, &c. for fear of injuring the viscera. Finally it is right to add that in almost all cases in which the child has been delivered by manual interference, it is better to remove the placenta rather early after the birth than to wait for any length of time.

The following summary of the dangers of version to the mother and child taken from Dr. Fleetwood Churchill's instructive paper on Version, (Dublin Med. Journal, vol. 15, p. 394), will advantageously close these general remarks, before proceeding to notice the classes of cases which specially require its performance.

"The *danger* to the mother may arise. 1st. From the operator not changing the direction of his hand, in accordance with the pelvic axes, and consequently pushing his fingers, through the vagina.

"2nd. The hand may be forced through the walls of the uterus if too much force be used in searching for the feet.

"3rd. The uterus may bruise itself against the hand or the limbs of the fœtus when making the turn.

"4th. Without any evident injury, the irritation of the operation, may give rise to subsequent inflammation.

"5th. The shock may be serious or even fatal.

"The *dangers* to the child consist: 1st. *In compression of the funis*, which commences about the time the buttocks appear at the os externum. After this time if there be much delay, the child will perish from the interrupted circulation, unless by chance the umbilical cord should have lodged in the angle at the junction of the sacrum and ilium.

"2. If much extracting force be used, the spine may be dislocated; the hips also; and the leg has been pulled off.

"3. Compression of the head is enumerated by Dewees, as one of the dangers to which the fœtus is exposed."

The simple enumeration of these dangers, ought as Dr. Churchill observes, to go far towards obviating most of them.—J. S. S.

PLATE XLVI.

ARTIFICIAL LABOUR: TURNING IN THE FIRST OBLIQUE POSITION OF THE HEAD (OCCIPUT TO THE LEFT ILIUM).

(HALF SIZE).

Figure 1.—THIRD STAGE.

In this position the hand grasps the two feet, and begins to extend the legs upon the thighs, in order to effect the version of the child.

Figure 2.—FOURTH STAGE.

The two legs are extended, and the feet are grasped in such a manner, that the thumb rests above the external malleolus of the right leg, and the middle finger above the external malleolus of the left, whilst the index finger is placed between the legs above the internal malleoli. The operator should profit by the interval between the contractions of the uterus, to perform the act of turning.

REMARKS.—The special application of version which first offers itself for remark, because its performance is least difficult, is its employment in twin cases to expedite the birth of the second child, when that event is delayed beyond a reasonable time, or when the child presents in a transverse position. The soft parts have been so well dilated by the passage of the first child, that little difficulty is experienced in either case, in introducing the hand within the uterus, or in turning the child and effecting its extraction. The existence of plural gestation is often suspected, but can only be positively known beforehand by the stethoscope revealing a difference in the action of the two fœtal hearts, but after the birth of the first, when the hand is placed on the abdomen to ascertain the degree in which the uterus has contracted, it becomes aware of the presence of a second child and an examination per vaginam generally reaches its membranes, and often the presenting part. Each child is enclosed in a separate bag of waters, but considerable variety exists in the membranes and placentæ of twin children, a variety which merits attention. Each child may be enclosed in a separate amnion and chorion and have a distinct placenta, but more commonly the two placentæ, even though no vascular communication exists between them, are so intimately united as to form but one mass, and this disposition of placentæ obtains whether each child is enclosed in a separate amnion and chorion, or whether both children possess separate amnia, but are enclosed in one common chorion. The existence of these varieties in the membranes and placentæ has been verified by the personal experience of the Editor. It is also said that there is occasionally, though rarely only one amnion. Nearly all that is practically useful respecting the presentations of twin children, and their combinations may be learned from the 4th, 5th and 6th tables, inserted in the remarks on Pl. 44. From these tables it clearly appears that præternatural presentations are more frequent in plural, than in single births, and it is also shown contrary to what has been usually stated, that the largest proportion of twins present both with the head, and not one child with the head, and the other with the pelvic extremity. In a great majority of twin cases (in 180 out of 240 recorded by Dr. Collins) the second child is expelled within half an hour after the first, and occasionally the interval is so short, that there is no opportunity of ascertaining the presentation. It is always right to determine the presentation of the second child as soon as the first has been separated, that if situated transversely, it may be turned before the waters escape, or uterine contraction is renewed. In the management of labours, in which there is more than one child, and where the birth of the second does not quickly follow the first, some practitioners recommend the second child to be delivered immediately after the birth of the first, while others direct its expulsion to be left to the natural efforts, which according to Ingleby who advocates non-interference, usually commence about six or eight hours after the birth of the first. The present practice of Collins, Merriman and Ramsbotham, who have had the greatest experience, is to adopt a middle course. If the head or breech is found to present, a binder should be applied so as to make gentle pressure on the abdomen. After the lapse of half an hour, the membranes may be ruptured and the uterus slightly stimulated with the view of exciting uterine contraction. No harm can possibly arise from this plan, because the soft parts have already been properly dilated by the passage of the first child. Where these steps do not succeed pass the hand cautiously into the uterus and bring down the feet, but where the head has made any considerable *descent* into the pelvis, the forceps will be the best means of affording assistance. The delivery, however, of the second child, either by turning or the forceps is *very rarely* called for, but is occasionally advisable because experience has shown that the second child is very likely to be still born, if left longer than two or three hours unassisted.

Where both sets of membranes break before the first child is expelled, which is, however, a rare occurrence, the parts of two separate children have simultaneously descended into the pelvis, the head of one child, and the feet of the other, (Med. and Phys. Journ. 1832, vol. 67, p. 78, Ed. Med. and Surg. Journ. Jan. 1822, p. 78) the heads of both children. (Med. and Phys. Journ. vol. 25, p. 29, Med. Chir. Trans. vol. 12, p. 366). One leg of each child (Ramsbotham's Obstetric Medicine and Surgery, p. 634). The children in the last instance alluded to, were expelled after gently pushing up the presenting part of one and carefully drawing down the other, in two, the natural pains were sufficiently powerful to expel them successively or simultaneously; but in one, which proved fatal, both heads were lessened before the delivery was effected.

The placenta of the first child occasionally comes away without any interference, and without any hæmorrhage, before the birth of the second, but as it is most commonly united with the other placenta, it should never be interfered with till after the birth of the second child. When the delivery of both children is effected, and it is necessary to remove the placentæ, the hand should never be withdrawn from the uterus till both have been separated, and as perfect a contraction of that organ produced as possible. Where hæmorrhage occurs in the interval between the birth of the first and second child, all parties agree in the propriety of early and artificial delivery.—J. S. S.

Version dans la 1ère position oblique du sommet

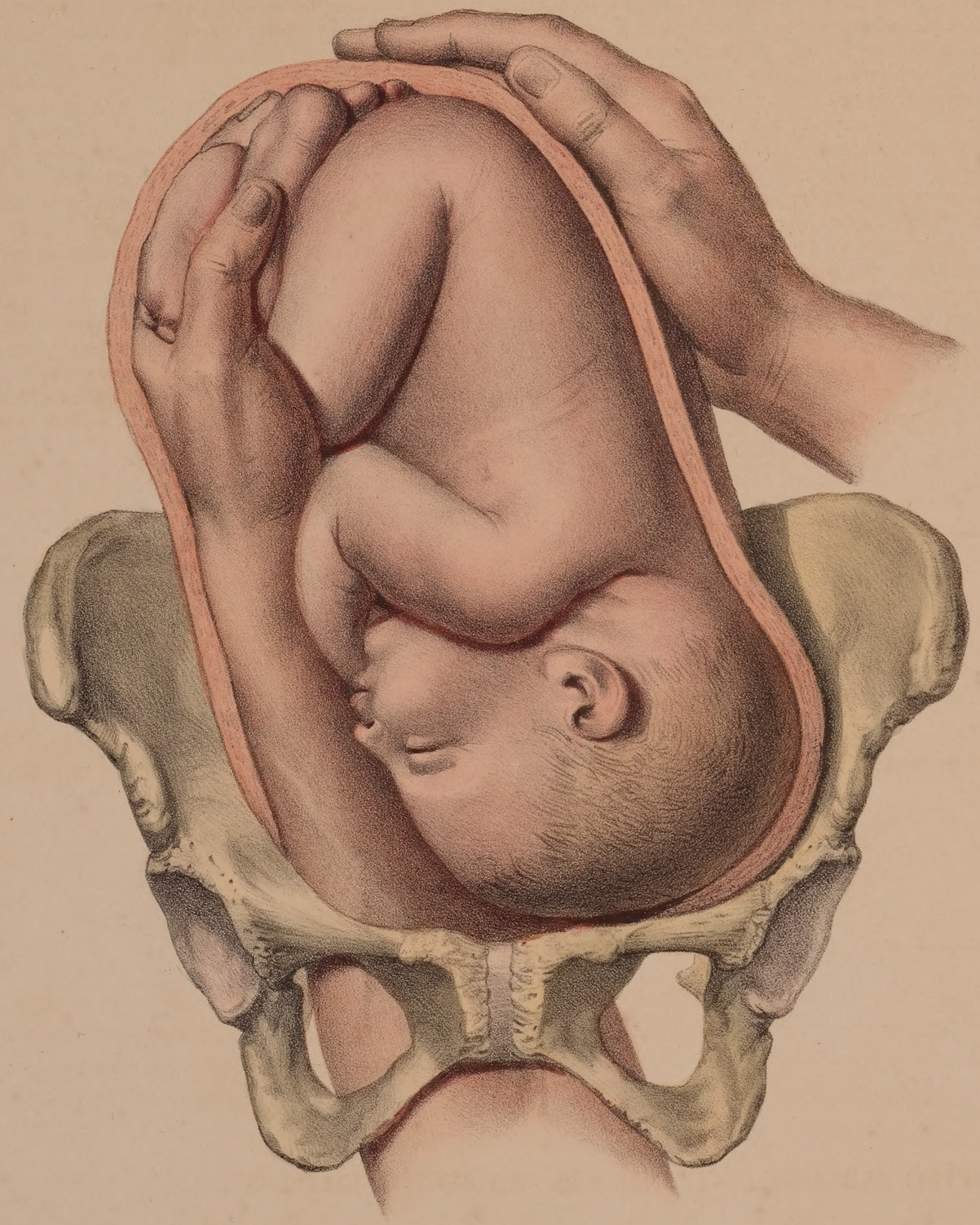

Fig. 1. Troisième Temps.

Fig. 2. Quatrième Temps.

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Publié par Germer Baillière, à Paris.

Lith. de Fourquemin.

Version dans la 1.re position oblique du sommet

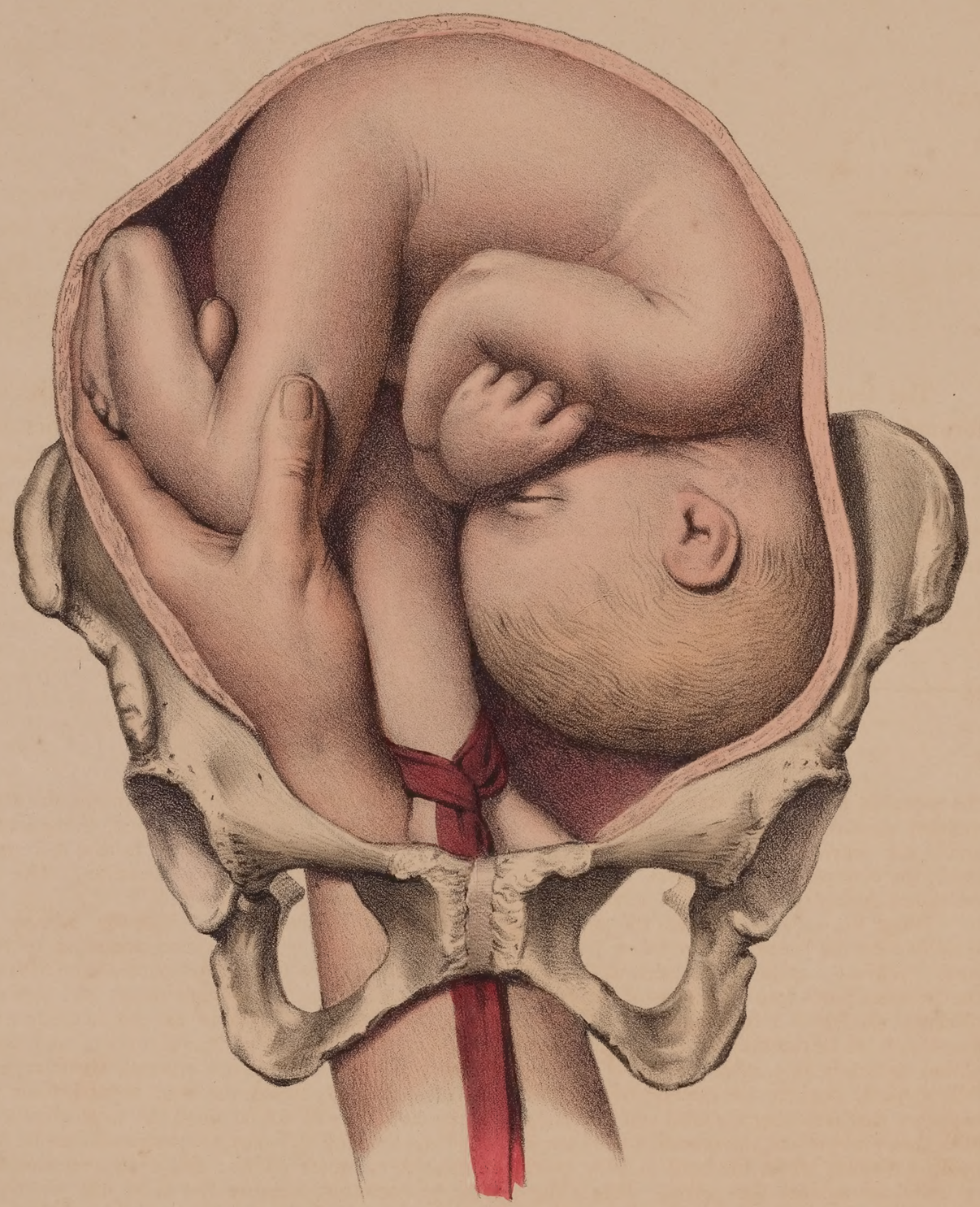

Fig. 1. Troisième temps. (bis).

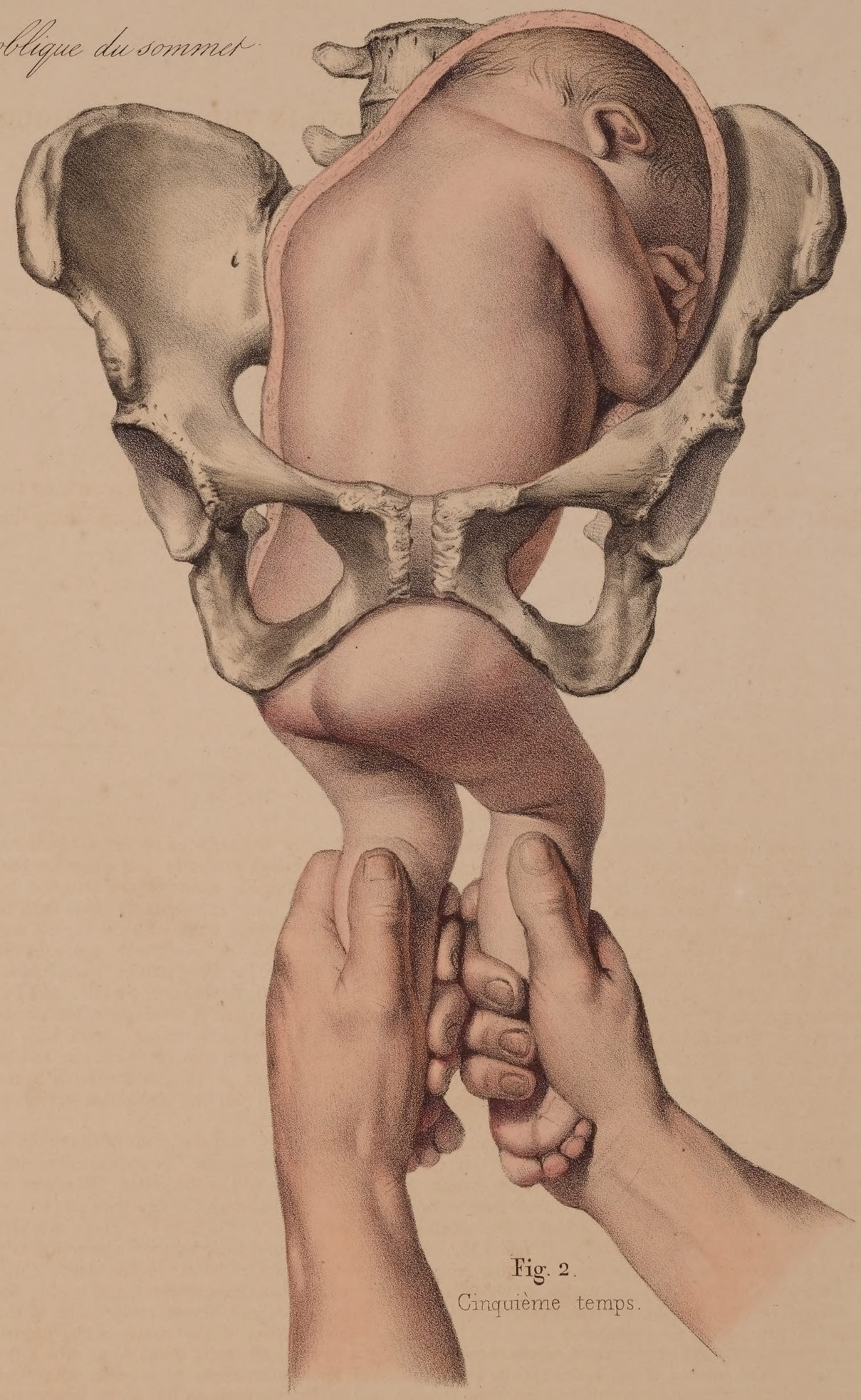

Fig. 2.
Cinquième temps.

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PLATE XLVII.

ARTIFICIAL LABOUR: TURNING IN THE FIRST OBLIQUE POSITION OF THE HEAD (OCCIPUT TO THE LEFT ILIUM).

(HALF SIZE).

Figure 1.—THIRD STAGE (bis).

If in the third stage the hand has only been able to grasp and bring down one foot; before searching for the other, the first should be fixed by means of a tape: the left hand should then be introduced along the inside of that extremity, and the other sought for, and brought down.

Figure 2.—FIFTH STAGE.

The feet and legs are without the vulva; the left hand has seized the right leg and given it a turn forwards, and from right to left, so as to bring the right hip behind the left anterior inclined plane of the pelvis; whilst the left hand, taking hold of the right leg has given it an opposite movement, that is, from before backwards and from left to right, and has brought the left hip in front of the right sacro-iliac symphysis, by which position, the entrance of the hips into, and their passage through the pelvis, will be much facilitated.

REMARKS.—One of the most formidable complications of labour which occasionally demands the operation of version for procuring the immediate delivery of the child is rupture of the uterus or vagina. Though generally fatal under the best possible management, the case is not entirely hopeless. Many instances of unquestionable recovery are recorded by Collins, Ramsbotham and others, and what is more extraordinary, some of these women have subsequently given birth to children *with impunity*. The rupture most commonly takes place at the junction of the cervix uteri with the vagina, and extends to both organs. It usually occurs either anteriorly behind the symphysis pubis, or posteriorly opposite the prominence of the sacrum, but occasionally though less frequently it is situated laterally. Dr. Blegborough has given an excellent representation of the anterior rupture in the second volume of the London Med. Repository, p. 361, and Dr. Denman one of the posterior rupture. (Engravings, Pl. XI. 4to. 1815). The injury is occasionally confined to the uterus and more rarely to the vagina. When limited to the uterus, the laceration may be situated at the mouth, neck, body or fundus of the organ. It may involve both the proper structure and the peritoneal covering, or it may commence in and be limited to either of these textures. The rupture, whether confined to the muscular structure, or whether it extends to the peritoneum, only slightly, or is so extensive as to admit the immediate escape of the child into the abdominal cavity, is equally dangerous.

The causes of this accident are chiefly two, disproportion between the head of the child, and the pelvis of the mother, owing to narrowness or deformity of the pelvis, and 2ndly. Previous disease of the part ruptured. It occasionally arises also from a jutting inwards of the last lumbar vertebra, from the presence of a hard tumour within the pelvis, (Remarks on Pl. 40) from unusual sharpness of the linea ileo pectinea, and from complete closure of the uterine orifice (See Dr. Ramsbotham's case of double uterus with rupture of that organ before alluded to in remarks on Pl. XXVI. Three singular cases are recorded in the Dublin Med. Journal, vol. 16, p. 55 and 155, where a rigid and unyielding os uteri was completely torn off and expelled by the force of the labour pains. A similar instance is recorded by Mr. Scott, in the Med. Chir. Trans. vol. XI. Part 2. Laceration of the uterus and vagina are occasionally produced by obstetric operations, and might, like rupture of the bladder, stomach or intestine, be the result of a violent blow or any sudden and severe compression of the abdomen. The operation of turning is no unfrequent cause of laceration of the vagina or of the mouth of the uterus, *particularly* when too hastily executed or when performed before these parts have become sufficiently dilatable to admit the passage of the hand with ease. The passage of an hydrocephalic head, rash and forcible attempts to remove, either an emphysematous child or a retained placenta, have produced the same injuries, and finally, too early an use of the forceps has lacerated the os uteri, when that orifice has not been dilated to such an extent as to render their application prudent or eligible.

The symptoms which indicate the laceration, though occasionally obscure, are in general very strongly marked. Sudden and severe pain of a crampish character accompanied with cessation of the labour pains, great distress from pressure in the region of the uterus, and excessive prostration and anxiety lead the attendant to strongly suspect its occurrence, while the recession of the presenting part of the child, and feeling its extremities distinctly through the abdominal parieties of the mother, positively prove its existence. Where, however, the injury is of small extent, though equally fatal, the uterine action not unfrequently continues pretty vigorous, and at least assists considerably in the delivery of the child. In other cases, the very pain which causes the child's expulsion, seems to produce the laceration. The sudden cessation of all resistance during the operation of version, is an evidence of rupture having occurred.

When the accident happens, the practice at the present day is invariably to effect the delivery of the child as soon as possible after the laceration has taken place. The means employed must be varied according to the circumstances of the case. When the child has escaped out of the uterus, the best practice is to introduce the hand with all possible care through the lacerated parts into the cavity of the abdomen, to bring down the feet without delay, and then extract the child. The placenta should also be brought away with as much clotted and fluid blood as can be easily removed. Any protruded intestine is to be carefully returned through the lacerated parts into the peritoneal cavity, and the edges of the rupture placed as nearly as possible in contact. When the head presents and has not receded, the forceps can seldom be successfully applied, because the attempt to introduce the blades generally forces the head beyond their reach. It rarely indeed happens, that lessening the head and delivering with the crotchet will not be found the more eligible proceeding. To accomplish this, and prevent the recession and escape of the child into the abdomen, the uterus should be fixed as firmly as possible by an assistant, while the head is very gently perforated, as much on one side as is practicable, and so as to fix the opposite one against the pelvis. This is the less to be regretted, because the child dies shortly after the rupture takes place, the pelvis is usually narrow, and moreover no case is recorded where a living child has been extracted by the forceps after laceration of the uterus had occurred.

Rupture of the uterus before the mouth of that organ is sufficiently dilated to admit the introduction of the hand within its cavity, is exceedingly rare, but certainly might arise where the uterus was burst in consequence of external violence. Here the attendant would only have to choose between the fearful alternative of gastrotomy or trusting his patient entirely to the efforts of nature.

After the extraction of the child, the woman either sinks from the immediate exhaustion, the supervention of sudden and dangerous peritonial inflammation, or at a still later period from the formation of matter about the region of the psoæ muscles. When the first symptoms of the accident are removed, early and active means should be employed to counteract the sudden and dangerous peritoneal inflammation that sets in. It is a matter of the utmost importance to open the bowels early, and keep up their action by mild purgatives. This is, however, very difficult and often impossible, till death is nearly at hand, when they act violently. The escape of any purulent matter which may form should be favoured as much as possible by the position of the patient.—J. S. S.

PLATE XLVIII.

ARTIFICIAL LABOUR: TURNING IN THE FIRST OBLIQUE POSITION OF THE HEAD (OCCIPUT TO THE LEFT ILIUM).

(HALF SIZE).

Figure 1.—SIXTH STAGE.

The hips have escaped from the vulva and have been seized by the hands: the two thumbs are placed on the sacrum of the fœtus; the fingers are extended over the anterior part of the thighs, so that the radial border of the fore-fingers is parallel to the transverse ramus of the pubis, and rests upon it, so as not to compress the abdominal viscera of the fœtus.

After grasping the hips, slight traction should be made of the trunk of the fœtus, by alternately directing, by a motion of elevation and depression, the right hip towards the left groin of the mother, and the left hip towards the posterior part of her right thigh.

Figure 2.—SEVENTH STAGE.

The umbilicus of the fœtus has escaped from the vulva. The left hand supports and upholds the body. The index and middle finger of the right hand take hold of the cord near its insertion, draw it down, and make a sufficiently large loop to prevent its being pulled upon or lacerated during the disengagement of the rest of the trunk.

REMARKS.—The last special application of the operation of version, which calls for remark, is its adoption as the means of procuring delivery in labours complicated with hæmorrhage. Uterine hæmorrhage during the last three months of pregnancy is invariably owing to separation of the placenta from the inner surface of the uterus. It may arise; 1st. From the placenta being abnormally attached to the cervix, and partially or completely implanted over the mouth of the uterus, (represented in Pl. XII, of Dr. W. Hunter's splendid engravings) or 2ndly. From this organ being accidentally separated from its normal attachment to the body or fundus of the uterus. When the placenta is attached to any part of the cervix uteri, it must necessarily be detached either during the process of development which that part undergoes in the latter months of gestation, or during the dilatation of the orifice of the uterus in the first stage of labour. The hæmorrhage is, therefore, in these instances named *unavoidable*; but when the placenta occupies its usual situation on the walls, or at the fundus of the uterus, its separation before the birth of the child is fortuitous, and the hæmorrhage is therefore termed *accidental*. This distinction is of great value in practice, because delivery by version is absolutely demanded in the unavoidable, while an early rupture of the membranes seldom fails to control the accidental variety of hæmorrhage.

Till the time of Ambrose Paré, who died in 1590, no determinate practice was established in flooding cases, but Guillemeau expressly says that Paré taught to turn and deliver by the feet in all dangerous floodings, and after his time, this method of managing puerperal hæmorrhages was generally adopted in consequence of his recommendation. Before the time of Paul Portal, however, when the placenta was felt as it often was at the os uteri in flooding cases, the universal belief was that it had separated entirely from the fundus and fallen down to the orifice; a knowledge of the occasional adhesion of the placenta to the internal orifice of the uterus, was certainly possessed by Portal, as early as 1683, (See La pratique des Accouchemens, soutenue d'un grand nombre d'Observations, Observ. 43rd, 51st, 69th and 79th, Paris, 1685.) although Petit was the first who demonstrated by dissection, that the placenta may be originally situated over the os uteri, and that its detachment gave rise to fatal flooding in the latter months of pregnancy, (Histoire de l'Académie Royale de Sciences, 1723). Giffard's 115 and 116th cases, show that as early as 1730, if not before, he had arrived at a correct knowledge of the occasional adhesion of the placenta "round the os internum of the uterus." He stated as his opinion in the 116th case, that "its adhering to the os internum was the occasion of the flooding, for as the os internum was gradually dilated, the placenta at the same time was separated from whence proceeded the effusion of blood." To Levret, however, belongs the merit of first teaching, that the best treatment of uterine hæmorrhage in cases of placenta prævia, was to deliver the woman artificially by turning the child. His dissertation was published in 1753, and is entitled, "Sur la cause la plus ordinaire, et cependant la moins connue des Pertes de Sang, qui arrive inopinement à quelques Femmes dans les derniers tems de leur Grossesses, et sur la seule et unique moyen d'y remedier efficacement," and as Dr. Robt. Lee justly observes, in his Researches on Diseases of Women, p. 209, "his monograph is one of the most valuable contributions, which the pathological department of obstetrical science has ever received." It has, however, been almost entirely owing to the valuable Essay on Uterine Hæmorrhage by Dr. Rigby of Norwich, published in 1776, that a knowledge of the important practical distinction between the unavoidable and accidental kinds of hæmorrhage became diffused among British practitioners, and the nearly opposite mode of treatment which they usually require was fully established.

The first step to be taken on the occurrence of hæmorrhage to any considerable extent towards the termination of pregnancy, consists in ascertaining whether the placenta is placed over the os uteri or not. If labour pains are present, the situation of the placenta may, indeed, often be inferred, according as the flooding ceases or is increased during the contractions of the uterus. In the unavoidable form of hæmorrhage, the flow of blood is usually renewed with each contraction of the uterus, while in the accidental it almost invariably ceases. The situation, however, can only be determined with certainty by manual examination, and where the ordinary one is found insufficient, the whole hand should be introduced within the vagina. Where the placenta is felt entirely covering the os uteri, the established and most desirable practice is to deliver by turning the child at the earliest moment; the os uteri can safely admit the introduction of the hand, by gentle efforts. The orifice will usually yield at a much earlier period, after a severe loss of blood, than under other circumstances; but occasionally it does not become sufficiently soft and dilatable, till several attacks of hæmorrhage have occurred, and this is by no means unusual, when the loss of blood begins as early as the sixth or seventh month of pregnancy. While waiting for its relaxation, the flow of blood must be checked by cold applications and plugging the vagina, till the operation of turning can be safely performed. Throughout this anxious period, the woman should be carefully watched, mild support administered, and the recumbent position and strictest quietude enforced. Much judgment and discrimination are occasionally required to select the most favorable time for delivery, but the forcible introduction of the hand through a rigid and unyielding os uteri, is so dangerous, and laceration of the uterus so much to be dreaded, that it is only warrantable where the previous hæmorrhage has been so severe, that immediate delivery affords the only chance of life.

In operating, it usually, though not invariably happens, that the hæmorrhage is frightfully increased at the moment of dilating and passing the os uteri, but no alarm at this or any other circumstance should induce the operator to withdraw his hand at this critical time; the hand may be passed between the uterus and the placenta, at the part where the separation has previously taken place, or else through the substance of the placenta itself, according to circumstances, always introducing it slowly and gently, and where the resistance is least. The membranes are then to be ruptured, and the feet seized and brought down into the vagina. The child should be extracted slowly, in order that the mouth of the womb may gradually yield, and permit the passage of the body and head with safety to itself, and also in order that the uterus may be excited to that regular and perfect degree of contraction, which is so essential to the well doing of the patient. Too much care cannot be observed in preventing any further loss of blood after the delivery of the child. Occasionally the uterus remains distended from a large quantity of blood collected within it previous to the birth, and this distension creates a tendency to hæmorrhage, which is best counteracted by an immediate and cautious introduction of the hand.

Where the placenta is only partially placed over the orifice of the uterus, provided the head or breech present, the membranes may be first punctured in order to evacuate the liq. amnii. This is done in the hope that the uterus will contract, the presenting part forcibly descend, prevent any further separation of the placenta, and so effectually compress the bleeding vessels as to control the hæmorrhage; but where this step proves unsuccessful, the attendant must be prepared to deliver by turning in the same manner, and with the same precautions, as in complete placental presentations.

In cases of accidental hæmorrhage, it rarely happens that the early exhibition of the secale cornutum in full doses before the powers of the system and of the uterus are impaired, and puncturing the membranes and evacuating the liq. amnii will fail to bring on uterine contraction, and thereby control the flooding and conduct the labour to a safe termination. The practice of rupturing the membranes, for the purpose of controlling flooding, was first introduced by Puzos, and his writings have tended much to establish the practice, (Mémoires de l'Acadamie de la Chirurgie, tom. 2, Part II. 1743, and also Traité des Accouchemens, 4to. 1759). Extreme cases may, however, occur, where the hæmorrhage continues in spite of these means, and to so alarming an extent as to endanger life. The uterus must, in such cases, be emptied of its contents by a forced delivery, and this will be best accomplished by manual extraction of the child by the feet, or by the application of the forceps or embryotomy, according to the stage of the labour and the peculiarities of the case. In all cases of flooding, the effect which the loss of blood exerts on the constitutional powers is to be regarded, and not the absolute quantity lost.

The following table will give information of the relative frequency, with which the different kinds of complex labour requiring version occur. The data given by most authors are imperfect or too limited for fixing the absolute proportion of complicated to uncomplicated labours, or of the relative frequency of the several species to each other. The proportion of cases in which convulsions occurred and the funis prolapsed, are also inserted.

Authority	Women delivered	Ruptured ute-rus or vagina	Unavoidable hæmorrhage	Accidental hæmorrhage	Convulsions	Funis prolapsed
Dr. R. Collins	16,414	34	11	13	30	97
Dr. J. Clarke	10,199	8	4	10	14	66
Dr. Merriman	2,947	2	7	21	5	11
Dr. J. Reid	3,250	1	3	23	8	16
Mr. Lever	4,664	3	14	16	4	9
Dr. Ramsbotham	48,719	11	,,	,,	,,	,,

—J. S. S.

Version dans la 1.re position oblique du sommet

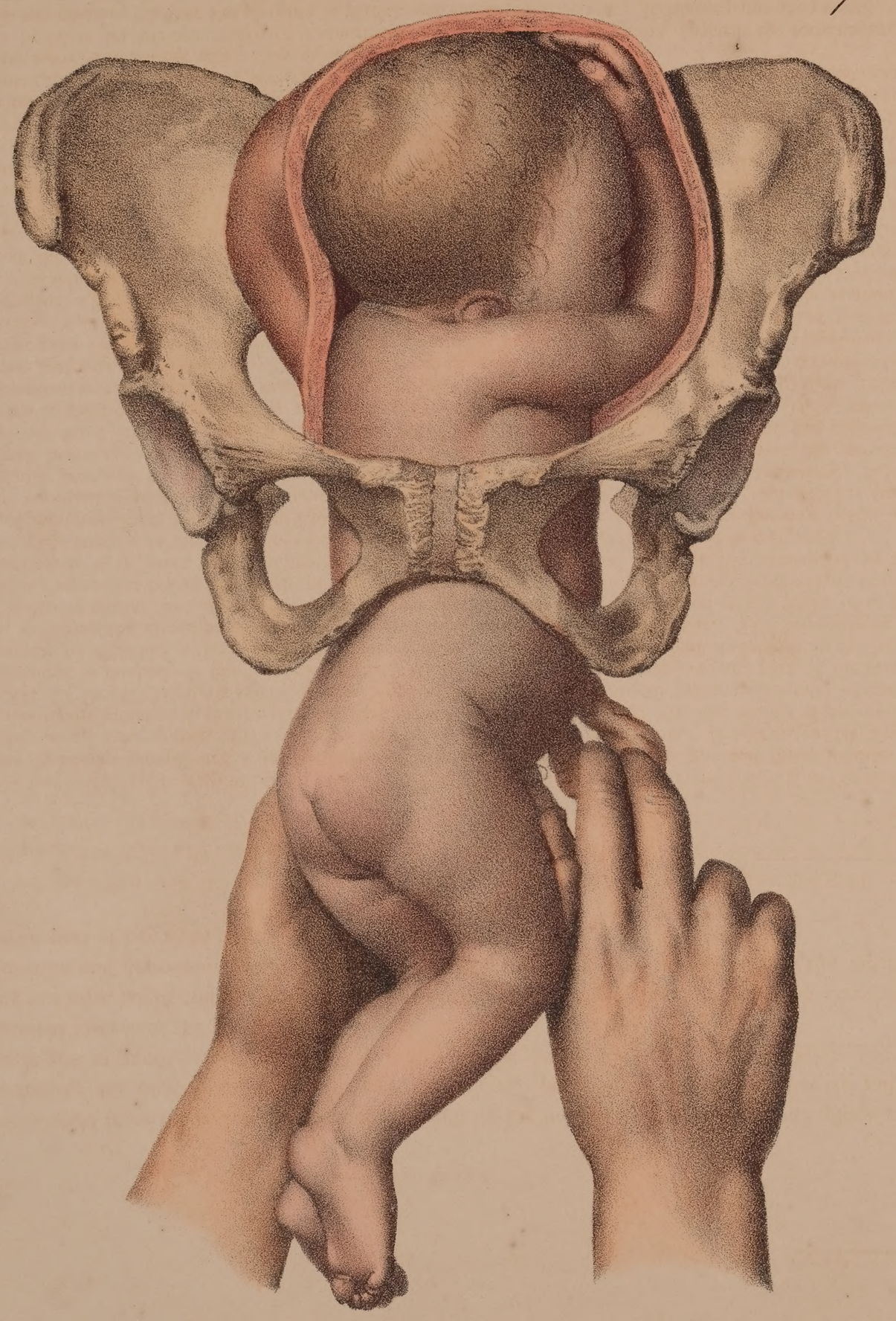


Fig. 2. Septième temps.

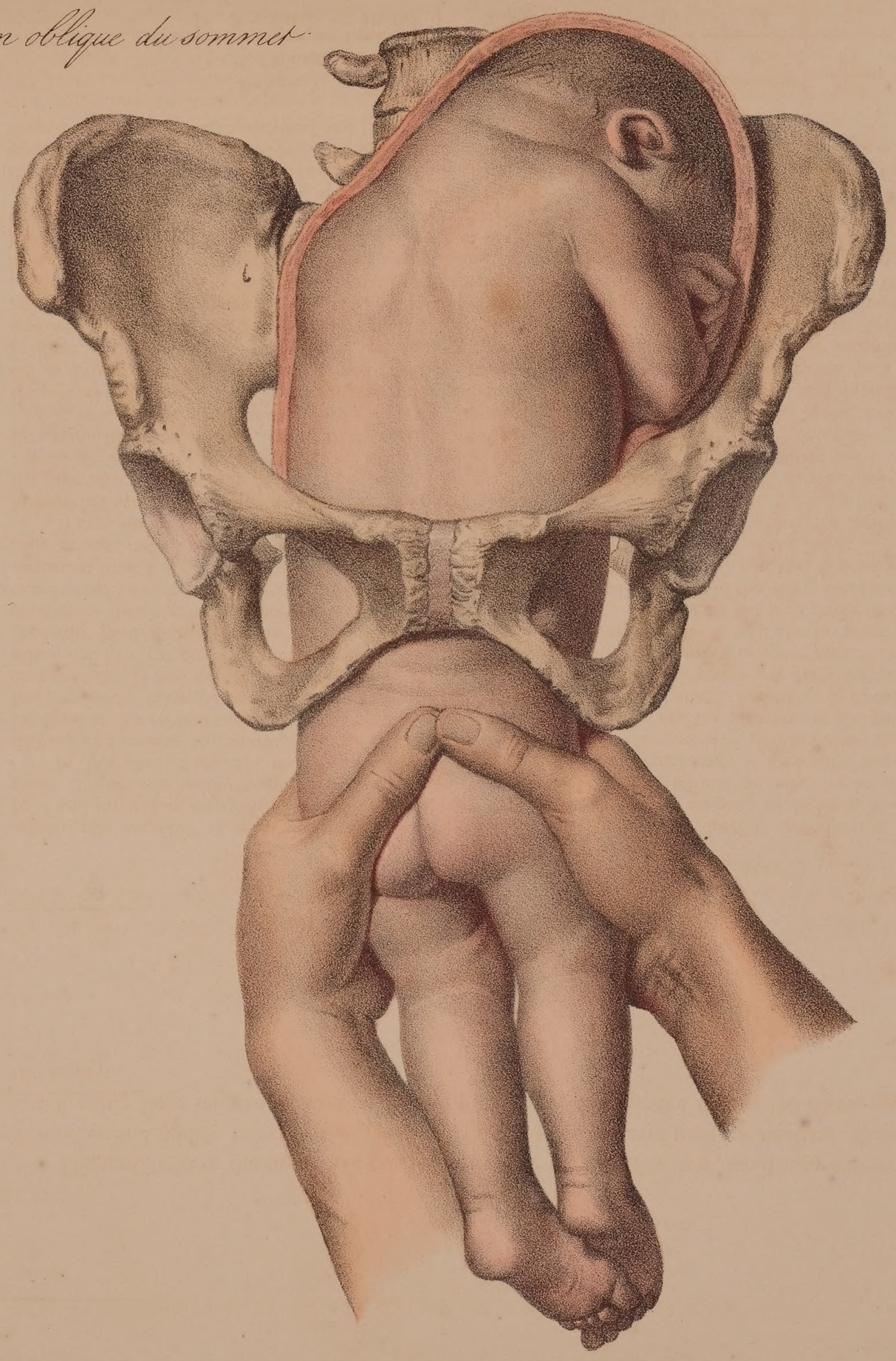


Fig. 1. Sixième Temps.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière, à Paris. Lith. de Fourquemin.

Version
dans la 1re position oblique du Sommet

Fig. 1. Huitième temps.

Fig. 2. Neuvième temps.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière à Paris. Lith. de Fourquemin.

PLATE XLIX.

ARTIFICIAL LABOUR: TURNING IN THE FIRST OBLIQUE POSITION OF THE HEAD (OCCIPUT TO THE LEFT ILIUM.)

(HALF SIZE).

Figure 1.—EIGHTH STAGE.

The trunk of the child is almost entirely out of the pelvis, with the exception of the shoulders and arms. For the purpose of disengaging them, the right hand is placed on the left side of the child, and supports it under the arch of the pubis, and at the same time, inclines it towards the left side of the mother. The index and middle fingers of the left hand are passed up along the back of the thorax at the left side, and try to bring down the left shoulder and extricate the arm which is raised over the left side of the head.

Figure 2.—NINTH STAGE.

The left shoulder and arm have been extricated and the latter is held down by the side of the child; the trunk has been drawn downwards and pressed towards the right thigh of the mother, and is kept there by the left hand. The index and middle fingers of the right hand are introduced behind the horizontal ramus of the left pubis, and should successively hook down the right shoulder and arm.

REMARKS.—Two modifications of the operation of turning have been proposed, the one by Dr. Breen of Dublin, the other by Mr. Radford of Manchester, both of which merit most careful study. Dr. Breen investigates the natural position of the fœtus in utero and the mechanism of the operation of turning, with the view of demonstrating that version is accomplished with more facility to the operator and greater safety to the mother, by hooking one or two fingers into the flexure of the knee than by seizing the feet as usually recommended. After remarking that the child is naturally placed in the uterus, in such a position as to occupy the least possible space, (See Pl. XXXVI.) he says, " For this purpose the head is inclined on the chest, the spine incurvated forwards, and the lower extremities so folded that the knees are nearly in contact with the upper part of the abdomen, and the heels applied to the breech with the ankles generally crossing each other. The superior extremities vary in their position and perhaps will not be found exactly similarly circumstanced in any two cases. On the contrary, the position of the lower extremities with regard to the trunk is nearly the same, whatever part may present at the brim of the pelvis in the commencement of labour. In proof of the constancy and uniformity of the relative position of the lower extremities with regard to the trunk, it is observed that the new born infant left to itself, folds its lower limbs in the manner now described. Deviations from this position must be considered as exceptions to a general law." As the child occupies the least possible space in the uterus in the position described, he contends that by preserving this, more power and freedom are given to the hand of the operator and any unfavourable situation of the child more easily altered.

He states that the best mode of changing the situation of the child, so that the head shall be removed towards the fundus uteri, consists in hooking one or two fingers in the flexure of the knee, pushing the presenting part gently upwards with the other hand, while the hand engaged in the uterus is drawn downwards and forwards towards the centre of the longest diameter of the brim of the pelvis. By this proceeding the child is made to revolve on the lesser axis of the trunk (an imaginary line passing from side to side nearly opposite the umbilicus) describing an arch more or less extensive, and the foot is brought into the vagina within reach of a noose. " By adopting a different procedure and endeavouring to lay hold of a foot according to the usual direction," he says, " it is obvious that the hand of the operator must traverse a greater space of the uterus, a matter of very considerable difficulty, either when the action of that viscus is strong or when it is closely contracted round the body of the child. Even when the foot is laid hold of it is very apt to slip from the grasp, as well from the violence of uterine action, as from the hand being cramped and nearly powerless, by reason of previous exertion. These difficulties are not imaginary, but such as frequently occur and cause extreme embarrassment to the practitioner, and much additional pain to the patient. By hooking the knee, the hand of the operator, is in a great measure, protected during the pains, and he is enabled deliberately to proportion, the force requisite to change the position, to the resistance he encounters. Besides, as the knees must have been nearly in contact with the superior part of the abdomen from the earliest development of the extremities of the embryo, should what may be called accidental circumstances have removed them from this natural and usual position, but little force will be necessary to restore them to it." When, however, an inferior extremity is removed from its natural position, and the foot brought nearer to the vagina than the knee, it is proper to take hold of the foot in preference to searching for the knee, but " in the great majority of cases, the knees will be found in a state of flexure near the abdomen."* (Ed. Med. and Surg. Journ. 1818).—J. S. S.

* When the child is firmly fixed in the pelvis, after using moderate force he recommends the hand in utero to be varied, and the fingers to be hooked in the flexure of the other knee. It is worthy also of remark, that Dr. Breen " always introduces the left hand for the purpose of having the right uncramped, and in a more efficient state for quickly extracting the head of the child, on which the preservation of its life so essentially depends."

PLATE L.

ARTIFICIAL LABOUR: TURNING IN THE FIRST OBLIQUE POSITION OF THE HEAD (OCCIPUT TO THE LEFT ILIUM.)

(HALF SIZE).

Figure 1.—TENTH STAGE.

Having extricated the arms, the operator passes his right hand and forearm between the legs of the child, he supports the trunk and presses it towards the abdomen of the mother, while he introduces his left hand into the cavity of the pelvis and brings the face of the child, which was directed towards the left side of the pelvis, into the hollow of the sacrum.

Figure 2.—ELEVENTH STAGE.

To extricate the head, the palm of the left hand should support the chest of the child, and the index finger should be inserted into its mouth, so as to keep the head in a state of flexion. The right hand rests on the back of the child, with the index and ring fingers bent over each shoulder, whilst the middle finger is extended and rests on the inferior part of the occiput, so as to prevent the head from being extended. The body of the child should then be carried from below upwards, and brought up towards the abdomen of the mother, by which means the face, the forehead, and the different parts of the head, will successively pass over the sacrum, the os coccygis, and the perineum, and will make their escape at the vulva.

REMARKS.—Mr. Radford's modification of version consists in invariably bringing down only one foot or one knee, whichever part is reached first. He ably demonstrates the superior safety of this proceeding, as regards the child, in the following quotation: "The operation of turning, as at present practised, consists in dilating the os externum, vagina, and os uteri, passing the hand into the uterus, searching for one foot and then for the other, bringing down the feet to the os externum and forthwith extracting the child. If the difficulty is very great in finding both feet, we are then allowed to content ourselves with bringing down one foot only."

"The presentations of different parts of the child's body, are not all equally safe to the mother and child. Presentations of the vertex are accepted as natural, because they are the most frequent, the most safe and are capable of being accomplished by the unaided powers of nature. The different presentations of the head constitute varieties, but are nevertheless more safe both to the mother and child than any other. The presentation which ranks the next in point of safety, is the breech, after which are placed presentations of the lower extremities. In labours where the trunk or superior extremities of the child present, the process cannot be completed by the natural powers, except in those rare cases where the spontaneous evolution takes place. If left to her own unaided powers, the mother almost inevitably perishes and also her offspring."

"In these cases, therefore, manual assistance becomes necessary. The practice is evidently that of changing the position of the child, so that the natural powers of the mother may accomplish its expulsion, or that it may be delivered by the accoucheur. The means most desirable to adopt in such cases, would be if possible, to change the presentation to that of the head, this being the safest and the most natural. This practice was inculcated and attempted by the older writers, but cannot be put in execution, from the inability to seize a body of such magnitude as the child's head, so as to bring it to lie over the os uteri. As the breech is the presentation next in safety, we might on this account be induced to seize this part to effect a change of position, but the same objections exactly apply to this, as to the attempt at bringing down the head. We are therefore reduced to the necessity of adopting the present practice of bringing down the feet. A superficial view of these cases might lead to the conclusion, that if it were possible to effect a breech presentation, little comparative advantage would be obtained over bringing down the feet; but the results of practice prove, what might be inferred from reasoning, that the child's life is much more frequently preserved in those cases in which it presents the breech than where the feet come down first. The measurement of the child round the hips and thighs, when the latter are turned up towards the belly, as in breech cases, approaches nearly to the circumference of that portion of the head, which lies parallel with the pelvic cavity in natural labour. The dilatation of the os uteri and os externum is effected so completely by the passage of the breech, that very little resistance is offered to the expulsion of the head or a dexterous extraction of it, if the umbilical cord should shew signs of compression, hazarding the life of the child. This, however, is not the case in presentations of the lower extremities; the child in this case descends in a wedge-like form, constantly presenting an increase of measurement in the successive parts of its body; which parts, in comparison with the head, are rather more yielding. At the time the head, which presents the greatest circumference, enters the pelvis, compression of the funis takes place and if the cervix and os uteri are not sufficiently dilatable, which is most generally the case, especially in first labours, the child will be lost. The attempt to bring the child rapidly through the pelvis, has a tendency to increase the opposition, by inducing a spasmodic action of the cervix, which coupled with the inadequate dilatation of the os uteri, becomes pro tempore, an insurmountable barrier to the extraction. Is there then no practice that would enable us to bring down a part, approximating in its measurements to that of the breech, which we have already stated to be so safe to the child, but which cannot be effected? There is, and this practice consists in *never bringing down more than one foot* in the manual operation of turning the child.

The propriety of this practice may be shown, by considering the greater safety of breech presentations over those of the feet, and comparing the measurement of the breech, where the thighs are flexed upon the pelvis, with that of the head. If as above stated, we are not able to effect a breech presentation by the hand in utero, we ought to prefer that operation which produces a presentation possessing a measurement nearest to it, and this consists in bringing down one foot only, leaving the other which would become turned up towards the abdomen of the child, thus producing a presentation compounded of the breech and one lower extremity. The circumference of the hips in this position of the parts is very little less than that of pure breech cases, and must consequently be attended by nearly all their advantages.

The subjoined measurements have been accurately obtained from children born at the full period of gestation.

	Inches.
Circumference of that portion of the head which presents in labour.	From 12 to 13½
Circumference of the breech with the thighs turned upwards to the belly, as in breech presentations. . . .	From 12 to 13½
Circumference of the breech with one thigh turned up towards the abdomen and the other extended. . .	From 11 to 12½
Circumference of the hips when the legs are extended, as in feet presentations.	From 10 to 11½

These measurements prove: 1st. That breech cases differ very little in their power to dilate the passages of the mother as extensively as the head, and therefore, that whenever the breech passes, we may expect the head to pass with moderate ease, either by the natural efforts or by judicious artificial aid.

2ndly. That when one thigh is turned up towards the abdomen of the child, that the measurement is very little less than that of the presenting part in pure breech cases, and therefore, we may expect the head to pass with nearly as much ease as in those cases.

3rdly. That where both feet are down, the measurement of the hips differs so much from that of the head, as to be insufficient to accomplish that dilatation of the soft parts, which will allow the head to pass or be extracted with sufficient celerity to save the child, when its life is threatened by the compression of the funis."—(Ed. Med. and Surg. Journal, 1832).

He next proceeds to show that the practice is proper, on account of the mother, also. If we are counselled, in cases where the liquor amnii has escaped, the uterus is actively contracting and closely embracing the child, to content ourselves with bringing down one foot only, if there exists any great difficulty in getting both, because it is easier and safer to both mother and child; why he asks, should we be restricted from pursuing the same plan, where the presence of the liq. amnii and the absence of uterine contraction render turning an operation easy of accomplishment and one of comparative safety to the mother. He contends, that it is desirable in all cases, and especially where there is difficulty, in consequence of the liquor amnii having been long evacuated and the uterus powerfully contracted upon the child.* In the latter cases bringing down one foot requires less room and produces less of that irritation in the uterus which arises from morbid sympathies, excited in part by the pressure of the child against its firmly contracted parietes, and in part, by the manual movements of the operator. When all the parts have been long exposed to the mechanical influence of pressure and have perhaps sustained injury from the long continued, but ineffective action of the uterus, and when the os uteri is also hard, tumified and indisposed to dilate, every possible addition of irritation to that which already exists should be studiously avoided. (Ed. Med. and Surg. Journ. 1832).—J. S. S.

* Extreme cases of difficulty in turning are most commonly met with in præternatural presentations neglected in the early stages. Mr. Radford "has never yet met with a case where the liquor amnii has been evacuated for more than twenty-four hours, where the difficulty of turning was not increased by a strong circular band of uterine muscular fibres, which embraced closely and firmly the lower part of the chest and the abdomen of the child, leaving the breech and inferior extremities in a kind of chamber at the fundus; the head, shoulder, and inferior extremities lying beneath, and the presenting part protruding through the os uteri, which is partially dilated."

Version dans la 1.re position oblique du sommet.

Fig. 1. Dixième temps.

Fig. 2. Onzième temps.

Dessiné d'après nature par Emile Beau. Paris, publié par Germer Baillière. Lith. de Fourquemin.

Présentations des épaules et des bras.

Fig. 2. Deuxième position de l'épaule et du bras droits.

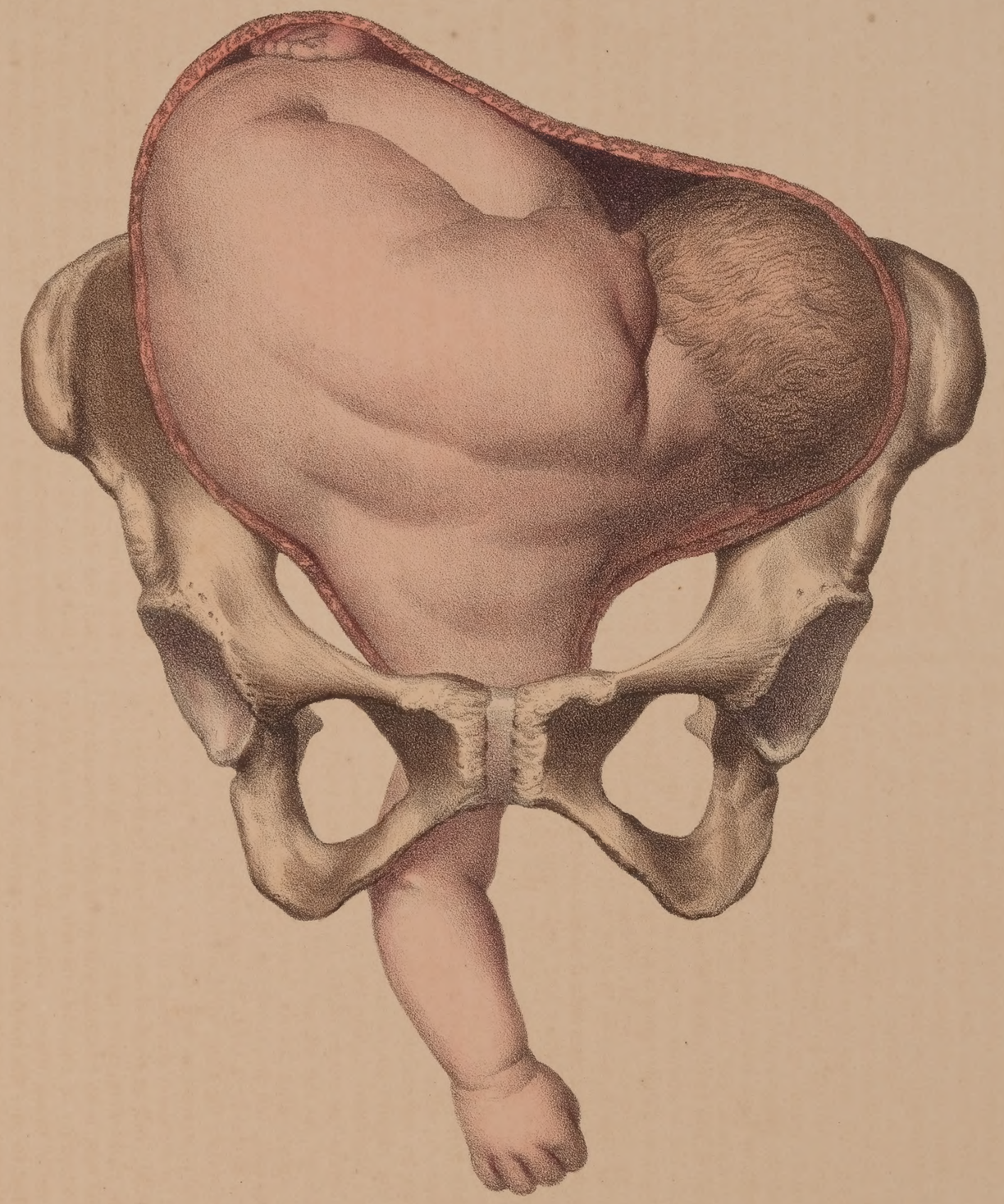


Fig. 1. Première position de l'épaule et du bras droits.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière à Paris. Lith. de Fourquemin.

PLATE LI.

ARTIFICIAL LABOUR: PRESENTATION OF THE SHOULDERS AND ARMS.

(HALF SIZE.)

Figure 1.—FIRST POSITION OF THE RIGHT SHOULDER (acromion to the left ilium), AND OF THE RIGHT ARM.

Figure 2.—SECOND POSITION OF THE RIGHT SHOULDER (acromion to the right ilium), AND THE RIGHT ARM.

REMARKS.—The class of præternatural labours is generally divided into two orders. The 1st. contains labours in which the breech or any part of the lower extremities presents; and 2nd. Labours in which the child lies transversely over the brim of the pelvis with its head towards one ilium, and its breech towards the other, whether the hand, the elbow, the shoulder, or both hands be the presenting part. The first order of præternatural labours has been fully considered in the remarks on Pl. XLI—XLIV, which illustrate the presentations of the breech, knees and feet, and delineate the mechanism by which the child is expelled when the pelvic extremity of its long axis passes foremost through the cavity of the pelvis. The second order of præternatural presentations and the peculiarities of version, the operation required for rectifying the unfavorable position of the child in arm cases, are illustrated in the present and two succeeding plates.

Two classes of arm presentations have been established, according as the right or the left arm of the child presents at the brim of the pelvis, and each of these classes has been again subdivided into two orders, according as the anterior surface of the child looks towards the abdomen or spinal column of the mother. (See General Table of Presentations in the remarks on Pl. XXXIX). The presentations of the right arm are delineated by M. Moreau in the present plate. Presentations of the right arm are also figured in Pl. LII, and the second position of the left in Pl. LIII, but the child is here represented in the position in which it is placed, during those peculiar modifications of the four first stages of version which are required, when that operation is performed, because the arm or shoulder presents.

The occurrence of transverse presentations places the lives of both mother and offspring in danger, and when left to nature almost uniformly proves fatal to the child from the high degree of pressure to which it is subjected before expulsion. No means exist by which they can be ascertained before the occurrence of labour, and it therefore becomes of the highest importance, to discriminate them accurately by manual examination, instituted during the first stage of labour. They are occasionally ascertained before the escape of the liq. amnii, but most commonly remain undetected, except in the second child of twin cases, till the membranes rupture. The distinguishing marks between the first and second order of præternatural presentations, are not, however, always so clearly perceptible by the sense of touch, as to render a mistake impossible. An arm has on many occasions been at first mistaken for a leg, an elbow for a knee, and a shoulder for a hip. Repeated and careful examination, will, however, usually determine the exact part which presents. The acromion and spine of the scapula or the clavicle and ribs or the coccyx of the child, will be reached and made out by the finger, or the closure of the hand of the child when alive upon tickling the palm, and the retraction of the foot when the sole is so treated, will generally remove the uncertainty; but whenever an extremity of the child is felt at the os uteri, if the membranes rupture and there is much uterine action, it is advisable not to remain any longer in doubt, but to pass the hand into the vagina, and so determine accurately whether the arm or leg is really the presenting part. This is of the highest practical importance, because almost totally opposite modes of practice are required. In footling cases the delivery is left to the efforts of nature, but in arm and shoulder cases, version is almost universally required, and an early knowledge of their existence demanded, because the *success* of that operation in a great degree depends upon the *time* at which it is employed. If too long delayed the child is inevitably lost, and the danger of the mother, and the difficulties of the operation are both greatly increased.

Care should also be taken not to consider a prolapsus of the hand as a real presentation of the arm; for the hand, when previously placed upon the ear or near the breech, not unfrequently descends, as soon as the membranes have given way, by the side of the head or breech.

When a child is placed in the transverse position represented in this plate, it requires but little consideration to perceive, that if it has arrived at the full term, and the pelvis of the mother does not exceed the average size, its passage through the pelvis in the second stage of labour, will be opposed by difficulties almost insuperable. Experience has indeed proved, that the contractile power of the uterus has, in a few instances, been adequate to the expulsion of the child (rarely however alive*) in a doubled state, by that process which Denman named spontaneous evolution, and in which he erroneously imagined that an actual turning of the child was accomplished by the efforts of the uterus alone.† Far more commonly, however, when the term of gestation has advanced beyond the middle of the seventh month, the woman either dies undelivered in consequence of rupture of the uterus or exhaustion, or survives the delivery only a short time, from the great general disturbance of the system occasioned by the severity of *this natural process* of delivery. It is now, therefore, universally the practice to turn the child, whenever the operation can be accomplished with tolerable safety to the mother, and as early as the state of the uterine orifice will permit; but when the child is already destroyed by the violent contractions of the uterus, and is already forced low down into the pelvis or impacted there, the delivery is effected by lessening the thorax and bringing down the breech, or else by cutting through the neck with a decapitating hook, and bringing away the child in two parts.

The history of the management of arm presentations is curious and instructive, because it traces the gradual rise and progress of the important operations of lessening the thorax and decapitation, the former of which may justly be regarded as the counterpart of that of craniotomy when the head is impacted in the pelvis. Before the time of Ambrose Paré, the middle of the 16th century, no precise rules seem to have been instituted for the management of this kind of præternatural labours. The antient practice was almost invariably to attempt to bring down the head to the brim of the pelvis and failing in that to extract the child, whether alive or dead, by crotchets, and in whatever manner seemed most practicable. Paré, however, in 1575, expressly directed the feet to be sought for and brought down in all præternatural presentations. (Book 24, ch. 26). Although not as Dr. F. H. Ramsbotham, observes, "the first suggestor of this great practical improvement, Paré has the honour of having satisfactorily proved the safety and utility of turning in transverse presentations, and enforced its adoption both by his precepts and example." (Obstetric Medicine and Surgery, p. 248, London, 1841). It was not, however, till the time of Mauriceau, 1668, and then principally through his teaching and practice, that the superiority of delivery by turning in arm presentations was fully established. This method of delivery was universally taught and almost always practised, till near the close of the eighteenth century. Cases, indeed occurred, where from the early escape of the liq. amnii, the neglect of interference at the proper period, or the violence of the pains, the uterus became so firmly contracted, and the child forced so low into the pelvis, that the introduction of the hand was extremely difficult or even impossible. Long continued efforts, however, dexterously applied, generally enabled the operator to pass his hand, by the side of the impacted shoulder into the cavity of the uterus, but it was found that the child had ceased to live, and these forced deliveries were so frequently fatal to the mother, that experienced practitioners dreaded the operation under these unfavourable circumstances and sought to deliver without turning the child. So early as 1722, Smellie, failing to reach the legs, fixed a crotchet above the ribs, tore open the abdomen, and after repeated efforts brought the child away double (Collect. 35, case 3). He did the same in 1730 (case 4). Giffard also in 1725, (case 5) states that "the shoulder and side of the child were so strongly engaged and sunk so low, that he could neither return the arm, nor with all his strength move the other parts to fetch it by the feet." He, therefore, as the child was dead, effected the delivery by twisting off the arm, fixing a hook in the side and pulling it sideways to draw the buttocks towards the orifice. After several attempts the child passed double, and the woman contrary to expectation recovered. In 1785, Denman, after he had by his Memoirs in the London Medical Review (by Simmons) vol. 5. made known and established the fact, that long continued action of the uterus was occasionally equal to the delivery of the child without the intervention of art, laid it down as a practical rule, that when turning was impracticable or highly hazardous from the strong and violent contractions of the uterus, the chance of an evolution "should set our minds at ease," and induce us to leave the case to nature. Denman, however, recommended trusting to nature in extraordinary cases only, and not in all instances, of arm presentation, as is erroneously stated in the works of Lachapelle and Velpeau, and even in the reported Lectures of Gooch and Blundell. In his earliest Memoir he expressly remarks that "the custom of turning and delivery by the feet in presentations of the arm, will remain necessary and proper in all cases, in which the operation can be performed with safety to the mother."* Other practitioners, besides Denman, convinced of the extreme hazard of the operation and of the death of the child in such instances, only considered how they could bring it away with the least pain and danger to the mother. From Dr. Sims' paper, "On Arm Presentations," (London Med. and Phys. Journ. p. 481), vol. 7, 1802, we learn that several years before, Dr. Garthshore had performed and recommended the severing of the head from the body with the blunt hook, an operation mentioned by Heister, (Cap. 153, Sect. 9) as newly invented in his time by one Horne, and long before by Celsus. Dr. Sims attempted this by passing a blunt hook round the neck, but this part resisted a force sufficient to extract the child double, and the head and thorax passed at the same time. He says, "the more experience I have had, the more I have been desirous of bringing away the child in any possible way, rather than running the risk of these very difficult turnings. Sometimes I have been able to get at the head, and with the perforator and crotchet have accomplished the delivery; sometimes calling to mind the spontaneous evolution of Dr. Denman, I have succeeded in imitating it by fixing the crotchet in the anus or groin: and now and then, pulling by the arm to get the thorax as low as possible, I have perforated this, and getting away piecemeal whatever part presented, have divided the body in two parts; in this way awkwardly imitating Dr. Garthshore's operation; or passing the crotchet through the thorax and abdomen, I have fixed it in the bones of the pelvis and thus brought the breech down." In a case attended by Dr. Sims in conjunction with Dr. Squire, a crotchet was fixed upon the neck, and the point guarded with the fingers on the opposite side; the head was then gradually separated, the body first extracted by the arm, and the head afterwards by a finger in the mouth and the thumb on the chin. He adds, "the child was not large, or the difficulty of separating the vertebræ of the neck, by means of the crotchet, would have been greater; it may, however, I apprehend, always be accomplished with this instrument much easier, than with the common blunt hook; but if filed to an edge on the inner side of the bend, this might perhaps be a very convenient instrument for such a purpose and appears to be the very same as that recommended by Celsus." In 1802 Dr. Joseph Clark of Dublin, (Med. and Phys. Journ. p. 394, vol. 8) says in a letter to Dr. Sims, "much experience in difficult cases has taught me to dread the operation of turning the fœtus in utero. Where the death of the fœtus is certain, either by the putrid state of the integuments of the presenting arm, or by a prolapsed umbilical cord, I have been accustomed for some years past to instruct my pupils to attempt the operation of embryotomy with Smellie's large perforating scissars and crotchet, and to endeavour to get away the fœtus piece-meal, in any manner which appeared to them least distressing to the patient." In July 1800, in a case where the arm and shoulder of a full grown putrid fœtus were impacted in the brim of the pelvis, which resisted every *reasonable* exertion to turn, the presenting arm was twisted off, and the thorax perforated freely, with the view of diminishing the bulk of the presenting part and of promoting putrefaction, labour pains were then waited for and the fœtus at the end of thirty-six hours was expelled double. From these or similar occurrences, the operations of decapitation and evisceration became gradually instituted in the present century; and under the auspices of Dr. Joseph Clarke, Dr. Merriman, Dr. Douglas, Dr. John Ramsbotham and Dr. Robert Collins were fully established. They are now adopted by the leading practitioners of the present day, as the most efficient modes of accomplishing delivery, where turning and delivering by the feet is too hazardous to the mother to be persevered in."—J. S. S.

* Velpeau briefly refers to 137 cases of spontaneous evolution, in only twelve of which the child was born alive. (Second Edition, 1835).

† Denman having been called to an arm case in 1772, and to a second shortly after, where the breech of the child was brought down by the force of the pains, and eventually expelled without any interference on his part, subsequently observed and collected no less than thirty cases, most of them premature, but some at the full period, where the child passed in this manner. He named the process "spontaneous evolution," believing that an actual turning of the child took place, and that the superior extremity of the child receded from one side of the pelvis into the uterus, whilst the breech came down on the other, and was expelled through the vulva. Douglas in 1811 and 1819, from actual observation denied the accuracy of this explanation. He maintained that no real evolution occurs, that a recession of the presenting arm was impossible, and that the child was forced through the pelvis in a doubled state by the mere expulsive power of the uterus. The views of Douglas as to the mechanism by which the child passes have been subsequently confirmed by the personal observations of Gooch and Jewel, and also by Drs. J. and F. H. Ramsbotham. The following is an accurate description of the process. The whole of the arm is protruded externally by the powerful uterine contractions, and the shoulder and chest forced low down into the cavity of the pelvis. The acromion comes out under the symphysis pubis, and as the loins and breech descend into the pelvis at one side, the apex of the shoulder is directed upwards towards the mons veneris; the breech is then received into the hollow of the sacrum and is eventually expelled, sweeping the sacrum and distending the perineum excessively. During the whole of this process, the head remains above the brim and the apex of the shoulder is external to the vulva, so that the clavicle is strongly pressed against the symphysis pubis, and forms the central point round which the body of the child partially revolves, the opposite shoulder and arm, and the head being the last part expelled. The spontaneous evolution is, however, too rare and extraordinary an occurrence to be expected and relied upon, as a means of delivery, where the gestation has advanced more than half way between the sixth and seventh month, unless indeed the condition of the fœtus is such as Dr. Douglas describes it. "If," he says, "the arm of the *fœtus* should be almost entirely protruded with the shoulder pressing on the *perineum*, if a considerable portion of the thorax be in the hollow of the *sacrum*, with the *axilla* low in the *pelvis*; if with this disposition, the *uterine* efforts be still powerful, and if the thorax be forced sensibly lower during the presence of each successive pain, the evolution may with great confidence be expected." It is an axiom in midwifery in arm presentations to turn the child so early as to prevent the necessity of witnessing a spontaneous evolution.

* In the second paper Denman says, "The fact of spontaneous evolution being ascertained I must leave it to other practitioners to determine upon the particular cases in which this event may be reasonably expected and properly waited for."

PLATE LII.

ARTIFICIAL LABOUR: PRESENTATIONS OF THE SHOULDER AND ARM.

(HALF SIZE).

Figure 1.—FIRST POSITION OF THE RIGHT SHOULDER AND ARM.

First stage.—The arm has a noose round it, to enable the operator to keep it down at the side of the body, when the feet shall have been got out, and the turning accomplished. The right hand is to be introduced along the left side of the uterus, and is to raise the left side of the thorax of the child from the brim, and push it upwards, so as to be able to slip it between the uterus and left side of the fœtus, for the purpose of reaching the feet. The left hand should be applied externally to prevent the uterus from being pressed upwards, and to press the feet down towards the right hand.

Figure 2.—SECOND POSITION OF THE RIGHT SHOULDER AND ARM.

Third stage.—The right hand has got hold of the feet, and is about to bring them down to the vulva, whilst the left hand applied externally should press down the nates, and assist the motion of turning as much as possible. The hand and forearm of the fœtus which were outside the os externum, have partly returned within the vulva.

Remarks.—When version is employed to rectify the position of the child in arm presentations, it is undoubtedly desirable to undertake the operation as soon as the hand can be introduced into the uterus, with safety to its orifice. The practitioner should watch with the utmost attention for the earliest possible moment, at which he thinks he can succeed, so as to turn the child before it has been forced by the pains too low into the pelvis, or the uterus itself has become firmly contracted round its body. The causes of difficulty where the pelvis is normal* resolve themselves into three. 1st. Rigidity of the os uteri. 2. Resistance from the active contractions of the uterus. 3. Impaction of the child, either at the brim or within the cavity of the pelvis. These causes, whether existing singly or combined, always produce anxiety and frequently much embarrassment. If the os uteri is fully dilated, the membranes entire, or but lately ruptured, and the uterine action trifling, the operation is attended with but little difficulty or danger; but when the waters have escaped at the very commencement of labour, at a time when the presentation is undiscoverable on an ordinary examination, and not detected till some time after, when the arm is felt in the vagina with an os uteri dilated, only just sufficient to allow its escape, the case is otherwise. Experience has fully proved the mischievous consequences of forcibly passing the hand through an unyielding os uteri. It will be necessary to employ the usual agents for relaxing the rigid orifice, such as bleeding, the exhibition of tartar emetic† or ipecacuanha in such doses, and at such intervals, as will produce that temporary depression of the system, which leads to relaxation of all contractile tissues, and to wait with patience, till the parts become sufficiently soft and dilatable to authorize the slow and cautious introduction of the hand without injury. This will generally take place, but Dr. Collins informs us, that he has known one instance where the delivery of the patient before her death was impracticable, in consequence of the rigid and unyielding state of the os uteri, "The mouth of the womb was absolutely as firm as a piece of thick leather, and embraced the arm of the child, as tightly as a ligature could be applied without cutting the part." (P. 67). Smellie met with two cases, where he found it impracticable to produce dilatation. Having seen a few instances where the os uteri was slightly torn and recovery took place, he thought he would try and cut open the os uteri with a pair of scissors, he did so, and with his accustomed candour, states that neither recovered.

When again the waters have been long evacuated and the pains are inordinately strong and forcing, although the os uteri be sufficiently relaxed and dilated, the attempt to turn would probably be unavailing and certainly attended with great hazard to the patient. Here then nothing remains but to watch the patient attentively, and either to wait till the uterus, (having exhausted its strength in fruitless endeavours to expel the child) becomes torpid and incapable of further exertion; or to lessen the vigor of the system by bleeding, or other depleting means, or to diminish the uterine action by the use of opium. Immediately the action of the uterus becomes suspended, the turning should be attempted. "In the practice of Midwifery as in other branches of healing," says Dr. Merriman (Synopsis, p. 87) we have sometimes only a choice of difficulties and much must of necessity be left to the discretion and judgment of the practitioner in each individual case that he attends. I am not disposed to think lightly of the hazard that attends having the *fœtus*, thus præternaturally presenting, wedged into the *pelvis*, yet I am strongly inclined to believe, that there is less danger in this, than in forcing the hand into the rigid, unyielding *uterus*, in a state of active contraction and irritability. The attempt to introduce the hand is likely to excite the uterus to still more inordinate action, and consequently to increase rather than diminish the danger of rupture, which has occurred at least as often from the violent and persevering attempts of the operator, as from the untoward position of the child. Upon the whole, therefore, I am of opinion, that there is a greater probability of doing good by delay, and using such means as are likely to control the excessive action of the uterus, than in persisting to introduce the hand, when the contractions of that organ oppose a resistance so obvious and impetuous; but as soon as this excessive action is subdued, the turning should be cautiously undertaken." The hand must be introduced with the greatest caution and gentleness, and without any hurry, half an hour or an hour being required to turn the child. If uterine action came on while the hand is within the uterus, we must wait till the pain subsides, laying the hand flat on the body of the child. The use of tartarized antimony with opium* is found extremely useful.

Where the waters have been long discharged, the uterine action powerful, and the child's body forced low, and firmly impacted in the pelvis for several hours, turning is hazardous in the extreme. Under these circumstances, whenever the death of the child can be satisfactorily ascertained, no prudent practitioner will attempt to turn, but effect the delivery by perforating the chest and abdomen, so as to lessen the bulk of the child, and then bring down the breech by the aid of the crotchet or blunt hook. Where caution is used, though tedious, this operation is one of comparatively little risk to the patient, but the delivery is very troublesome to the operator, an hour and a half or two hours being required in most instances for its completion. A free opening is first to be made with the ordinary perforator into the thorax, so as to permit a complete emptying of its contents; the diaphragm is next to be opened, and the abdominal viscera removed with the crotchet and fingers, so as to diminish the bulk of the body, and lastly the crotchet is to be fastened on the pelvis (not on the superior ribs) and assistance given during each pain, when if the woman is well formed, the breech is by a little perseverance got down, and the delivery accomplished. When there is much resistance and no urgent symptoms require immediate delivery, by witholding further interference for some hours, the body becomes softened and collapsed, and is then more easily removed, or is expelled doubled by the action of the womb, the breech following the curve of the sacrum and perineum.

The following is Dr. F. H. Ramsbotham's method of delivery by decapitation. The finger having been passed around the neck, a large sized blunt hook is to be introduced upon it, and the presenting part brought as low as it safely can be into the pelvis. The blunt hook is then to be steadied by an assistant, whilst the decapitator (a hook with an internal cutting edge) is to be directed over the neck by the side of the blunt hook which is then withdrawn. A sawing motion is now to be given to the cutting hook by the right hand, while the first finger of the left is kept steadily in contact with its blunt point. The cervical vertebræ will soon be divided, and the separation of the head from the trunk effected. The body is then drawn out by the protruding arm, and the head extracted by a crotchet or blunt hook introduced into the foramen magnum or the mouth.—J. S. S.

* "No case can occur," says Dr. Gooch, "the management of which will be so difficult as that of an arm presentation with deformity of the pelvis. This combination has proved too much for the skill of the most experienced practitioners." A case of this kind, where the woman died undelivered is narrated and figured in Guy's Hospital Reports, vol. 1, p. 328.

† ℞. Antim: Tartariz: gr. iv.
Aceti Opii gtt. xxx.
Aq: Fontis ℥vj.
A table spoonful every half hour. Extremely useful in quieting uterine action and inducing relaxation. (Collins).

* Antim: Tartariz: gr. v. vel. vj.
Aq. Fontis ℥viij.
Tinct: Opii: gtt. xx.
Syr: q. s.
One, two, or more table-spoonfuls to be given at intervals of from fifteen minutes, to two, three, or four hours, according to the effect it produces, and the necessity that exists for bringing the patient speedily, or otherwise under its influence. (Kennedy).

Deuxième position de l'épaule et du bras droits.

Fig. 1. Premier temps.

Fig. 2. Troisième temps.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière à Paris. Lith. de Fourquemin.

Deuxième position de l'épaule et du bras gauches.

Fig. 1.
Deuxième temps.

Fig. 2.
Quatrième temps.

dessiné d'après nature par Emile Beau. Publié par Germer Baillière à Paris. Lith. de Fourquemin.

PLATE LIII.

ARTIFICIAL LABOUR: PRESENTATION OF THE SHOULDER AND ARM.

(HALF SIZE.)

Figure 1.—SECOND POSITION OF THE LEFT SHOULDER AND ARM.

Second stage.—The left hand is grasping the feet, which it has reached by passing along the left side of the fœtus. The right hand, will be placed externally, and will depress the fundus of the uterus and press the nates of the child from left to right so as to assist the operation of turning.

Figure 2.—SECOND POSITION OF THE LEFT SHOULDER AND ARM.

Fourth stage.—The feet have been brought to the vulva by the left hand. The operation of turning is finished. The right hand should pull upon the tape so as to bring the left arm to the side of the child. The remainder of the labour will be performed in the same manner as has been shown in Pl. XLVII to L.

REMARKS.—Dr. Churchill in the Dublin Med. Journ. vol. 15, 1839, has collected statistics with the view of showing the frequency of version and the danger of the operation both to the mother and child. He regrets the want of attention to minute details so manifest in many reports of Hospitals, Dispensaries, &c. and expresses his estimation (in which the Editor most cordially concurs) of the minuteness, accuracy, and excellence of Dr. Collins' Tabular Views. An error exists in the Table of French records into which Dr. Churchill has himself fallen in common with most obstetrical writers, from regarding the statistics of Baudelocque and Boivin, as derived from sources different from those of Lachapelle. They are all taken from the cases that occurred, during a similar period of time, at l'Hospice de la Maternité, "dénomination," as Dugés informs us, "que le public aime encore conserver, qui, depuis, a été remplacée par celui de Maison d'Accouchemens." (Lachapelle, vol. 2, p. 6, 1825). This error which so materially affects the results, has here been so far corrected as to substitute the numbers of women and versions from the Tables of Lachapelle, including a period from 1803 to 1820. The returns of La Maternité for the five and a half first years of its establishment have not been obtained with sufficient accuracy to warrant their insertion.

TABLE I.

ENGLISH RECORDS.

DATE	AUTHOR.	HOSPITAL, &c.	CASES OF VERSION	TOTAL NO. OF CASES.	QUOTED FROM.
1781	Dr. Bland	Westminster Dispens.	9	1,897	Merriman's Synopsis
	Dr. J. Clarke*	Dublin Lying-in Hosp.	48	10,387	Trans. of Assoc. v. i.
	Dr. Merriman	London Private Pract.	14	2,947	Synopsis, 4 ed. p. 335
1818	Dr. Granville	Westm. Dispensary	5	640	Report of, p. 25
1826 to 1833	Dr. Collins	Dublin Lying-in Hosp.	33	16,654	Prac. Tr. on Mid. p. 73
1828	Dr. Cusack	Wellesley Dispensary	5	313	Dublin Hosp. Reports, vol. v. p. 495
1832	Dr. Maunsell	Do.	2	442	Edin. Journ. No. 117
1833	Do.	Do.	0	416	Dub. Journ. vol. v. p. 367
1828	Mr. Gregory	Coombe Hospital	3	691	Dublin Hospital Rep. vol. v.
1834 to 1837	Dr. T. Beatty	Cumberland-st. Hosp.	6	1,182	Dub. Jour. v. viii. p. 66, vol. xii. p. 273
1836 1837 1838	Dr. Churchill	Western Lying-in Hos.	8	990	See Reports
			135	36,569	

* This is somewhat uncertain. Dr. Clarke gives forty-eight *cross births*, which were treated in the usual manner—I suppose by version.

TABLE II.

FRENCH RECORDS.

DATE	AUTHOR.	HOSPITAL, &c.	CASES OF VERSION	TOTAL NO. OF CASES.	QUOTED FROM.
Mar. 1803 to Dec. 1820	La Chapelle	Maison d'Accouch.	329	37,895	Pratiques des Accouch. vol. 1 & 2
1806 to 1808	M. Ramboux	Clinique de Colmar	0	275	Bul. de la Faculté, &c. vol. ii. p. 73
1808	Do.	Clinique de Liège	1	216	Do. do.
1825 1826	Dr. Merrem	Cologne	3	157	Bul. de la Faculté, &c. vol. xvii. p. 283
1828	M. Papavoine	St. Louis, Paris	1	240	Jour. de la Progrès de Med. vol. xiv.
1829	. . . .	Hotel Dieu, Paris	2	280	Velpeau, l'Art d'Acc. p. 50
1830 1831	M. Ciniselli	Clinique de Pavia	2	94	Gaz. Med. de Paris, 1835
			338	39,157	

TABLE III.

GERMAN RECORDS.

DATE	AUTHOR.	HOSPITAL, &c.	CASES OF VERSION	TOTAL NO. OF CASES.	QUOTED FROM.
1789 to 1792 and 1801 to 1806	M. Böer*	Vienna	51	6,666	Die Natürliche Geburtshülfe, &c. vol. i. pp. 72, 148, 237, vol. iii. pp. 62, 130, 245.
	M. Naegelé	Heidelberg	22	1,411	Velpeau's Tab. View
1801 to 1807	G. M. Richter	Moscow	25	2,571	Synops. Prac. Med. Obstetric. p. 416
	Do.	Private practice	27	624	
1812 and 1813	E. von Siebold	Wurzburgh Hosp.	6	310	Siebold's Journal, fur die Geburtshülfe, &c. vol. i. pp. 114, 576.
from 1818 to 1829	Do.	Berlin Hospital	60	2055	Do. vol. iii. to x.
1819 1820	M. Ritgen	Giessen	1	180	Do. vol. vi. pp. 34, 262
1814 to 1824	M. C. G. Carus	Dresden	29	2133	Do. vol. vi.
	M. Kilian	Clin. de Prague	63	2250	Bull. de la Faculté, &c. vol. xxv. p. 352
1824 to 1827	M. Kluge	La Charité, Berlin	19	1254	Siebold's Journal, vols. vi. vii.
1825	Prof. Andrée	Breslau	5	181	Do. vol. vi. p. 154
1825 to 1828	Dr. Brunatti	Dantzic	3	380	Do. vols. vii. ix.
1825 1826	Dr. Theys	Trier	1	49	Do. vols. vii. viii.
1826	Dr. Henne	Konigsberg	2	156	Do. vol. viii. p. 121
1826	Dr. Voigtel	Magdeburg	1	29	Do. vol. viii. p. 131
1827	Dr. Küstner	Breslau	6	176	Do. vol. ix. p. 92
1829 to 1832	Dr. Adelman	Fulda	1	166	Do. vols. xi. xiv.
1830 to 1832	Dr. Siebold	Marburg	8	321	Do. vols. xi. xii. xiii.
1833 1835 and 1836	Do.	Gottingen	7	504	Do. vols. xv. xvi.
			347	21,415	

* I have taken these numbers from M. Böer's work, and am unable to reconcile them with those generally quoted.

TABLE IV.

TABLE OF VERSION CASES, WITH RESULTS TO MOTHER AND CHILD.

AUTHORS.	NO. OF VERSION CASES.	MOTHERS LOST.	CHILDREN LOST.
Mad. La Chapelle	329	not stated	73
Dr. Jos. Clarke	48	6	35
Dr. Collins	33	3	13
Dr. Cusack	5	0	2
Mr. Gregory	3	0	0
Dr. Beatty	6	1	6
Dr. Churchill	8	0	7
Professor Andrée	5	0	3
Dr. Kluge	7	1	3
Dr. Küstner	6	0	2
Dr. Adelmann	1	0	0
Dr. Böer	26	0	10
Total where the result to both mother and child are stated	148	11	81
Total where only the result to the child is stated	477	0	154

Several tables illustrating delivery by the application of forceps, may also be consulted for the data they afford in reference to cases that require delivery by version.—J. S. S.

PLATE LIV.

ARTIFICIAL LABOUR, APPLICATION OF THE FORCEPS.

(HALF SIZE.)

GENERAL RULES TO BE OBSERVED IN APPLYING THE FORCEPS.—The general rules to be observed in all the cases which may require the application of the forceps, are the following. 1st. To place the female in a convenient position; the position in which she was placed for the operation of turning, is also the most convenient in this instance.* 2nd. Never to apply the forceps before the os uteri is sufficiently dilated. 3rdly. To raise the temperature of the instrument by plunging it into water at 25° or 28° above 0 of Reaumur (89° to 95° Fahr.) 4thly. To cover the blades with some mucilaginous or unctuous substance, to facilitate their introduction. 5thly. To grasp each blade of the forceps near its centre, and hold it like a bistoury when about to make an incision. 6thly. To introduce each blade separately, taking care to guide it with the fingers of the other hand, until it shall have got between the cervix uteri and the head of the child. If this precaution cannot be taken, the blade should be made to pass over the surface of the head, taking care to keep the extremity closely applied. The blades should be introduced without using any force, and should penetrate principally by their own weight. If the end of the blade should hitch against the head or against any part of the sides of the pelvis, or if a fold of the scalp, or of the soft parts of the mother, should stop its progress, a slight change in its direction, or a slight movement, will be sufficient to free it. 7thly. The forceps should only be applied over the head.† If introduced over the pelvis of the child, the bones of that part run great risk of being broken, and the viscera of the abdomen and even of the thorax may be contused, which would probably prove fatal. 8thly. The male branch should generally be first introduced, and afterwards the female, the two branches are then to be united by fixing the pivot of the one, in the mortise of the other. 9thly. The forceps should always be applied to the latêral parts of the head, so that the diameter from the occiput to the chin, should be placed in the axis of the forceps. There is but one exception to this rule; when the biparietal diameter of the head is wedged in the transverse diameter of the brim, one branch requires to be applied over the face, and the other over the occiput. 10th. Before proceeding to the extraction of the fœtus, a slight traction should be made on the forceps, for the purpose of trying if the head be firmly grasped. 11th. The branches must then be brought together to the necessary degree, and a piece of tape should be tied round them, to maintain an even pressure. 12th. Traction should not be made in a straight line, nor quickly; it should be slow and continuous, and the axes of the brim, the cavity, and the outlet, successively followed. At the same time, a lateral movement, from left to right, should be made, care being taken to act very gently, so as to avoid contusing the soft parts, and give them time to relax.

Figure 1.—Forceps modified and used by M. Moreau.

The length is sixteen inches six lines. The distance between the two blades is nineteen lines above, and twenty-one lines below. The breadth from the pivot to the end of the blade is nine inches three lines.‡

1. Male branch which has the pivot.
2. Female branch, which is pierced to receive the pivot.

The thickness of the two branches joined together, near the pivot is seven lines. The branches below are of oval form and are seven lines and a half broad and three times in thickness.

A. Blade of the male branch.
B. Blade of the female branch.

The blades measure eighteen lines in breadth at the broadest part; the fenestra are four inches and nine lines in length, and four lines in breadth. The thickness of the edges of the blade is reversed; that is, in other forceps the strongest part is at the internal border of the fenestra, and the thinnest part at the external border; whilst in these forceps the thinnest part (one line) is at the inner, and the thickest (two lines) at the outer border, which allows the parietal protuberances to be lodged in the fenestra, without materially increasing the transverse diameter of the head, which is of great consequence, if the head be unusually large, or the pelvis small.

The branches approach each other more nearly between the blades, and the point of junction than they do in other forceps, to prevent laceration of the vagina which should be dilated by the head, when it is just about to make its escape.

C. Pivot.
3. Handle of the male branch.
D.
4. Handle of the female branch.
E.

Figure 2.—Key of the forceps used to turn the pivot C, and disconnect the blades D, E.

Figure 3.—Application of the forceps, when the head has escaped from the os uteri, and is lodged in the cavity of the pelvis; the occiput is behind the symphysis pubis, and the forehead in the hollow of the sacrum, or vice versâ.

A. The left hand grasps the male branch of the forceps, directs the end of the blade towards the vulva, and is about to introduce it.
B. Three fingers of the right hand placed between the left side of the vagina and the head of the fœtus, will serve as a guide to the blade of the forceps.

* Females are always delivered in France lying on the back, whether the labour be natural, or require manual or instrumental assistance. In England, the usual custom is for the woman to lie on the left side.—J. S. S.

† Dr. Hamilton strongly recommends the forceps to be applied if the child is alive, "when the breech becomes impacted in the pelvis, and the pains fail, so as to require artificial assistance. If within reach of the *common short forceps*, there is," he says, "no difficulty whatever in extracting it, even with four or five efforts, if the belly of the child be turned towards the nearer *sacro-iliac* synchondrosis." He considers that persons have been foiled in their endeavours to accomplish delivery in this way from not understanding this and also from using forceps with too narrow blades. (Merriman's Synopsis, p. 302, London, 1820). Dr. Reid, his former pupil tells us that Dr. Hamilton has never failed with them except in one instance, where the fœtus weighed nearly fourteen pounds, and was so wedged in the pelvis that he was obliged to use the crotchet. (Manual of Midwifery, p. 139, London, 1836).—J. S. S.

‡ The measurements throughout this description are French, consequently about one twelfth less than the English standard.—J. S. S.

REMARKS.—This and the remaining plates of his Atlas, M. Moreau has devoted to the illustration of instrumental delivery, more especially of delivery by the forceps. He has somewhat modified this instrument from the form which is most commonly used in France, and has also given general rules for the application of the forceps. These rules merit respectful attention, from the high station and great experience of the author, and for the most part assimilate with those inculcated by the leading authorities of other countries. The French forceps have of late years been very much improved by being reduced both in size and weight from those, which since the time of Levret have generally been employed; but the greater degree of compression which they necessarily produce upon the child's head, and the mechanism of the lock, (a pivot and mortise loosely fitted) would seem to render them still less eligible than the more usual British and German forms of instrument. The great variety of form, however, which exists,* proves most clearly that in the large majority of cases requiring the use of the forceps, the exact form of the instrument is of less consequence than the judgment and caution, which its application always demands.—J. S. S.

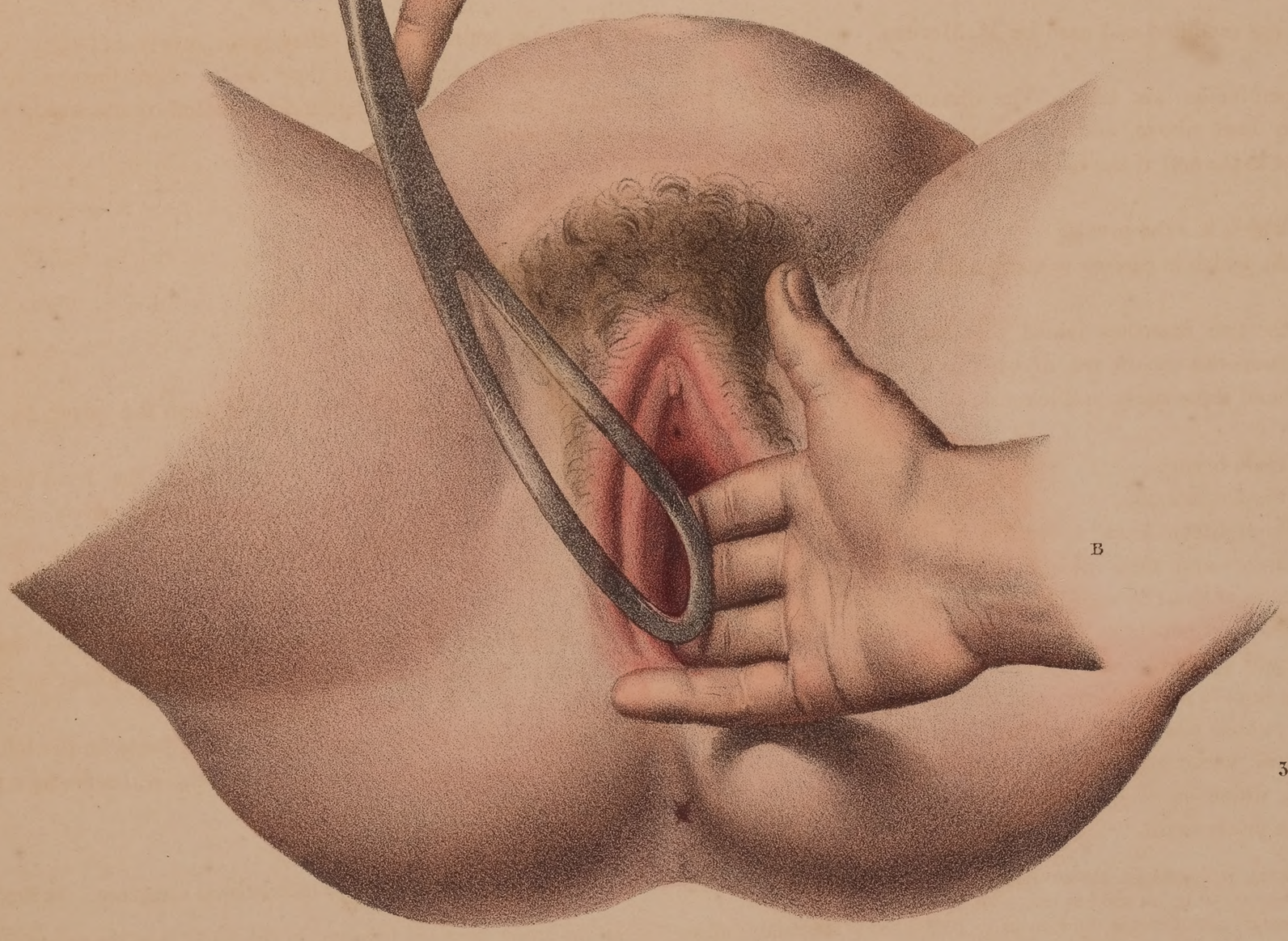
* Almost every candidate for celebrity has thought it necessary to modify the form of this instrument. Dr. Churchill has given figures of more than fifty varieties. Is this to be regarded as a proof of the difficulty experienced by able hands in its employment, or as evidence of a desire to employ this means of delivery in cases not adapted for its use and where the more valuable life of the mother is placed in greater jeopardy than is warrantable by a desire to preserve the less valuable life of the child?

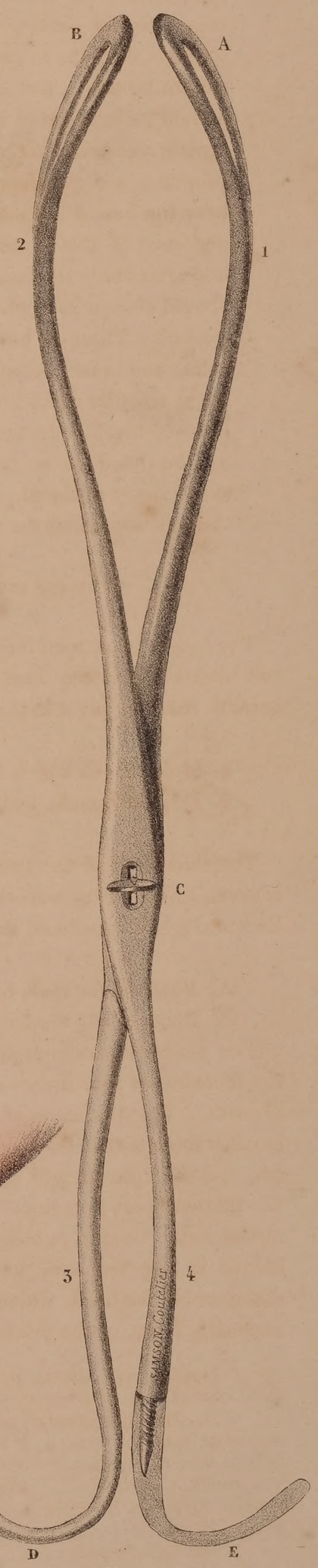
Application du Forceps.

Fig. 2.

Clef du Forceps

Fig. 3.





Forceps.

Fig. 1.

Dessiné d'après nature par Emile Beau

Paris publié par Germer Baillière.

Lith. de Fourquemin.

Application du Forceps.

Fig. 1.

Branche mâle du Forceps.

Fig. 2.

Dessiné d'après nature par Emile Beau. Paris, publié par Germer Baillière. Lith. de Fourquemin

PLATE LV.

ARTIFICIAL LABOUR: APPLICATION OF THE FORCEPS.

(HALF SIZE.)

Figure 1.—Male branch of the forceps.

Figure 2.

A. The male branch after having been introduced is supported by the hand of an assistant.

B. The female branch of the forceps, held in the right hand of the operator, is about to be introduced along the right side of the pelvis, above the male branch, which is already introduced.

C. The three fingers of the left hand, placed between the right side of the vagina and the head of the child will serve as a guide to the female blade.

Remarks.—In previous remarks it has been stated that all tedious and difficult labours depended either upon a deficiency of power or an increase of resistance. The expulsive power of the uterus is capable of overcoming a very great degree of resistance, but is occasionally unequal to surmount the obstacles which attend parturition. Irregularities in the presenting part of the child, the supervention of exhaustion, of fever or of inflammation on the part of the mother, or the existence of some complication of the labour, as necessary or accidental hæmorrhage, convulsions and other grave accidents may take place and require the immediate interposition of art for hastening or ensuring delivery. These cases are now by almost universal consent consigned to the manual or instrumental skill of the obstetrician, because experience has too painfully shown, that when left to the unaided efforts of nature, "the expectation of her most ardent votaries will be disappointed," and the lives of both mother and child generally lost.

The means of procuring artificial delivery now in use consist of: 1st. The employment of version which has been already illustrated so fully as to require no further remark. 2ndly. The use of instruments now under description; and 3rdly. The administration of the ergot of rye, a medicinal agent, which taken into the stomach possesses the specific property of exciting the active contractile power of the uterus. Version is more peculiarly applicable for procuring delivery, when the os uteri is dilated, but before the head has sunk low and become engaged in the pelvis, the forceps are available only when the head has become engaged or has descended considerably within that cavity, while the secale cornutum may be had recourse to at any time, most cautiously indeed at all times, and under peculiar circumstances requiring great judgment, either with the view of accelerating each of the stages of labour, as a means of bringing the head within reach of the forceps, or even of bringing on the labour itself. The instruments employed are of two kinds. 1st. Those which are harmless to the child, viz. the forceps and lever. 2ndly. Those which mutilate and destroy the child if not already dead, viz. the perforator, the crotchet, craniotomy forceps, osteotome, &c.

The invention and use of harmless instruments are comparatively of late date, with the exception of the fillet which is mentioned by Hippocrates, and particularly recommended for the extraction of the fœtus in difficult labours by Rhazes, the Arabian, the superintending physician of the celebrated hospital at Bagdad, during the latter part of the 9th and beginning of the 10th century. The use of instruments having the forceps' power of purchase is nevertheless very antient. Hippocrates apparently alludes to such when he advises the head to be seized τῶ πιεσρω.* He mentions also the use of two hooks, the one placed opposite the other, which would act after the manner of the double crotchet, but the earliest distinct notice of forceps as a means of extracting the fœtus, is to be found in the writings of the Arabians. Avicenna first recommended their use and Albucasis, who lived about a century after, and died in 1106 (to whom, indeed, we are indebted for a more ample and correct delineation of surgical instruments than any other of the ancients) gives directions for extracting the fœtus in difficult labours and describes and delineates numerous instruments to facilitate parturition. Representations of these may be seen in Aitken's Midwifery, Pl. 6 κ (London, 1786). Besides hooks and perforating instruments, there are two pairs of forceps, with curved blades and sharp teeth on their inside, similar in shape, but differing in size, the smaller named misdach, the larger almisdach, a third pair with angular dentated blades and sharp beaked points, named forfex, which is directed to be used for crushing the head where it is too large to pass. There is also another instrument of forceps-like construction, named vertigo, to be used for opening the os uteri. From the time of Albucasis till the middle of the sixteenth century, no particular mention of obstetric forceps occurs, till Rueffe of Zurich described and delineated two kinds, the one with a beaked extremity, the other smooth and unarmed, but both made with a fixed joint. (De conceptione et generatione hominis, 1554). It, however, seems certain that no instrument similar to the forceps or lever was employed for the express purpose of saving the child till near the end of the seventeenth century, when Hugh Chamberlen gave out to the world, that "his father, brothers and himself (though none else in Europe that he knew) had by God's blessing and their own industry, attained to and long practiced a way to deliver women, when the head on account of some difficulty or disproportion cannot pass without prejudice to them or their infants." (Preface to the translation of Mauriceau on Diseases of Women with Child, London, 1672). The peculiar formation, and the mode of using his instrument were studiously concealed for the sake of private advantage; but the original instruments were accidentally discovered about 1815, and coming into the possession of Mr. Cansardine, were presented to the Royal Medico-Chirurgical Society, and are figured in their Transactions (vol. ix). They consist of a simple lever with an open fenestra, a pair of forceps rivetted together by a pivot, a second pair of forceps in which the joint is formed by a loose pivot on one blade, adapted for reception into a corresponding hole in the other, and a third pair where the two blades are fixed together by a piece of tape passing through corresponding holes in each. After the time of Chamberlen, instruments of equivalent power were devised by different practitioners which they also kept secret. The forceps of M. Duse were described and figured by Mr. Butler in 1733 in the Ed. Med. Essays, one of the earliest, if not the very first of the Medical periodicals of this country. The forceps are also spoken of by Chapman, as the secret of Dr. Chamberlen, "now well known by all the principal men of the profession, both in town and country. (Essay on the Improvement of Midwifery, 1733). The following year engravings appeared of the instruments used by Giffard, and an improvement by Freake, Surgeon of St. Bartholomew's Hospital, and the year after of those of Chapman. Some time after this, two great men, Levret in France and Smellie in England, paid great attention to the construction of the forceps. Levret added the lateral curve, to adapt the blades to the concavity of the sacrum and lessen the danger of injuring the rectum by their points. He seems to have studied to produce an instrument of great mechanical power, and by so doing, made it cumbrous and difficult of application. Smellie shortened the blades, rendered the locking more simple and pointed out under what circumstances they should be applied. Innumerable modifications have since been made, the blades have been shortened still more, to prevent their being applied before the head has descended sufficiently low into the pelvis, the blades have been widened to allow the parietal bones of the child to pass more completely through the fenestræ, and thereby prevent the instrument from occupying additional space, and also to obtain a firmer hold by embracing the head at more points of contact; a narrower or a shorter blade has been antagonized to one of appropriate width, where the introduction of the second blade is difficult or impossible. The shanks have been lengthened towards the handles, so as to remove the lock from the vulva. Curves have been added to the blades: 1st. To adapt them more completely to the head and 2ndly, to the locking part, so that their use shall endanger the perineum less, or to assist the index finger in applying extractive force. One or both handles have been made moveable by a joint or screw to facilitate their introduction, but for general purposes the ordinary straight forceps, or those which are but slightly curved will be found most available. There is great inconvenience in a multiplicity of instruments in operative midwifery, and the fact should never be lost sight of, that mechanim can never be substituted for mind and manual dexterity. To use the words of Davis, "the hand that wields the instruments of this art is generally a mater of much more essential consequence to the patient's fate, than the specific forms of the instruments which are employed to its purpose." (P. 16, Operative Midwifery, 1825).

The history of the lever is disfigured by the selfishness and quackery which attended its introduction to practice.* After a short residence of Hugh Chamberlen in Holland, about 1670, its use was practiced and privately taught to pupils by Roonhuysen, Ruysch and others, under conditions of secresy, and on the payment of extraordinary fees. The mystery that attended its use as well as its novelty, magnified its powers and created popular ideas of its utility at variance with truth—ideas wickedly encouraged for the purposes of individual gain till its credit rose so high that in 1753, Jaques de Vischer and Hugo Vandepoll, physicians at Amsterdam, (the latter of whom afterwards lived at Canterbury under the assumed name of Dawkins, more than twenty years, and died in 1784), magnanimously resolved to purchase the secret and make it known for the public benefit, conduct which entitles the names of Vischer and Vandepoll to the grateful notice of mankind, because it stands forth in noble contrast to the unhallowed spirit of the age in which they lived—an age that made, not only personal service, but the abstract knowledge of alleviating misery, a staple article of trade, and even man himself a part of merchandize. They bought the secret, a flat piece of iron with a curve at each extremity, from the daughter of one of its employers to whom it had been bequeathed as a legacy, for about 5000 livres, and immediately made it public. The possibility of extracting a living child, however, became apparent from other sources. Dionis extracted a living child by fixing the crotchet in the nape of the neck, near the base of the occipital bone. (Traité des Accouchmens, p. 273, 1718) Isaac de Bruas of Midelburg in 1715, extracted a child when the head presented, with a blunt hook, which he was accustomed to use in breech presentations. Finding this instrument too thick and narrow, he formed a fenestrated lever decidedly the best of all the early inventions. Rigaudeaux in 1738, delivered a woman of a live child, whose head was impacted in the pelvis, by a chemist's spatula, bent by the aid of fire into a slight curve. Other practitioners delivered with a single blade of the forceps as Giffard occasionally and Warrocquier of Lisle. The lever or vectis has been variously modified by different persons, and made of wood, horn, ivory or metal, and has been covered or padded. The variety most commonly used is that of Lowder, and there is another which seems to have been improperly discarded from practice, invented by Dr. Aitken of Edinburgh, which can be introduced straight and curved afterwards (by means of a screw situated in the handle) to any angle required for adapting it closely to the child's head. A principle adopted by Dr. Davis in one variety of forceps which he has invented.—J. S. S.

* Πίεσρον. Instrumentum chirurgicum ad contundenda ossa capitis in extrahendo fœtu mortuo. Hederici Lexicon.

* One of the earliest and best accounts of "the invention and use of the lever of Roonhuysen," that we possess, is that drawn up by Dr. Bland, and printed in 1790, in the Medical Communications, p. 397—462, vol. 2. London.

PLATE LVI.

ARTIFICIAL LABOUR: APPLICATION OF THE FORCEPS.

(HALF SIZE).

Figure 1.

The forceps are applied: the two branches have been locked, the head is properly grasped, and the degree of pressure fixed by means of a tape. The two hands grasp the instrument; the left at the junction, and the right at the end of the handles below their hooks; and are commencing movements of traction, executed principally from side to side, but slightly downwards, so as to bring the occiput below the symphysis pubis, and out of the vulva.

Figure 2.—Intro-pelvimeter and callipers of Mme. Boivin.

This instrument is made of polished steel, and consists of three principal pieces, A, B, C. Two larger A & B, which with their curves, are twelve inches in length, (French measure) and one smaller, C, which is seven inches long, including its handle. With the three pieces, two distinct and separate instruments may be constructed, which form a complete apparatus for measuring the pelvis. The one which consists of the two branches A, B, curved at their inferior third, of the same length and size, and only differing in shape, at their superior extremity, is called the *external pelvimeter* or *callippers:* the other composed of the branch B graduated on one side, and the third piece C, constitutes what is called the *internal pelvimeter* or *intro-pelvimeter*.

Callipers. This instrument, as has been just stated, is composed of the two pieces A, B, which are brought together or separated at pleasure by their right or superior extremities; the one A, is pierced *a*, to receive the other branch B. There is a small screw, *b*, at the point where the branch is pierced, which keeps the branch B in its place, so as to allow the legs of the compass to be separated in the pelvis. It is used in the same way as that of Baudelocque, to measure the pelvis externally.

Intro-pelvimeter. The branch B, graduated throughout its straight portion, with the smaller piece C serves to form the instrument with which it is proposed to measure the interior of the pelvis. As this branch is to be introduced into the rectum, it has been named the *rectal* branch. The blade A, with the moveable head *c*, which supports the quarter of a circle or reporter *d, d,* is called the *reporting branch.*

The third piece C, the shortest is curved in two opposite directions and has at the middle of its curvature a hole *e,* destined to receive the rectal branch B, upon which it is made to slide according as it is necessary to make it approach or recede from the centre of that branch. It is fixed in its place by the side piece *f,* and the pressure of the handle. The handle *i* is trefoil shaped, and the other extremity *h* beaked. This is intended to be introduced within the vagina, and is called the *vaginal branch.* For full details respecting the application of this instrument consult, Le Mémoire de Mme. Boivin, sur l'Avortement et l'Intro-pelvimètre, 1828).

Remarks.—Delivery by forceps is that obstetric operation, by which the birth is effected without injury to the mother or child, when the head is partially or completely engaged within the cavity of the pelvis, and is employed like version to hasten or terminate labour, when the state of the mother or child require speedy delivery. If the head has not entered the superior aperture of the pelvis, even the long forceps cannot be without the greatest risk applied, and it is better to deliver by version, if the circumstances of the case call for prompt interference. The principal circumstances which require the use of the forceps are: 1st. Inefficiency of the labour pains, from exhaustion or a general enfeebled state of the mother. 2nd. The supervention of fever or local inflammation. 3rd. Malposition of the head or slight contraction of the pelvis leading to an *arrest* of the descent of the head through the cavity, rather than its *impaction* there. 4th. The complication of labour with hæmorrhage, convulsions, or a prolapsus of the funis. 5th. Delay in the birth of the second child in twin cases.

The conditions essential for the employment of the forceps, are the complete dilatation of the os uteri. 2ndly. The rupture of the membranes. 3rdly. Some degree of relaxation of the soft parts. 4thly. The head being engaged in the pelvis. The more relaxed indeed the soft parts are, and the lower the head has descended within the pelvis, the easier will be their application and the safer their use on all occasions. The ordinary English doctrine, however, which confines their use to cases, where the head is low enough for the ear to be felt, certainly limits their use within two narrow bounds. When the pelvis is normal, the os uteri completely dilated, and the soft parts favourable, they may, when circumstances require, arrest of the head, convulsions, prolapsus of the cord where the pulsation is gradually ceasing, &c. be applied, and the child be preserved by their use, as soon as the bulk of the head is completely engaged in the brim, but the practice of applying long forceps, of late years so much recommended, when the head is situated entirely above the brim, does not seem warranted by experience.* It is, indeed, a dangerous proceeding. "A practitioner of distinction and great experience employed the long forceps in this country in twelve cases. In some, the head was above the brim, in some it had partly entered. In every case the child was born dead. Four of the women died and every one of them suffered severely: some from inflammation, others from laceration of the soft parts." (Med. Quarterly Rev. vol. 4, p. 113, London, 1835).

The preliminary steps consist in removing any accumulationsf rom the bladder and rectum, and in placing the woman in the usual position on her left side, close to the edge of the bed. The blades are then to be introduced singly, and carried during the intervals of the pains by a slight lateral motion over corresponding sides of the head taking care to keep the points always closely applied to the surface of the cranial integuments, using the ear as a guide when it can be felt, and guarding the maternal structures by two or three fingers during the introduction of each blade, as represented in the plates. The two blades are then to be carefully adjusted so that their locks are adapted to each other, and can be brought together, and these are to be locked without entangling any hairs or portion of the labia. If the blades do not readily lock, they are not properly applied, and if when locked, the handles are placed in close contact with, or very far apart from each other, the head is not properly embraced and the instrument will slip on attempting extraction. Having altered the blades by a series of slight shifting movements executed by the hand placed above the locking part of each, or by a withdrawal and reapplication of either blade, till they are properly fixed, the extracting force is to be applied in the direction of the axis of that part of the pelvis, through which the head is passing, and always so as to allow the instrument to favour the rotations, naturally performed by the head. The force applied is at first to be moderate, and afterwards gradually increased, it is to be exerted during the occurrence of pains if any are present, and at intervals after the manner of labour pains, if these have ceased, and it is also to be used in a kind of zigzag horizontal direction from side to side, to prevent the instrument from slipping. Finally, great care must be taken not to injure the perineum with the shanks of the blades, and to support and guard that part from laceration during the passage of the head.

In addition to the essential conditions before enumerated, some probability of the child being alive should always exist to justify the use of the forceps, for whenever its death is positively known, the delivery can always be accomplished with more safety, and the sufferings of the woman will be more quickly terminated by lessening the head and extraction with the blunt hook or Lyon's pincers, than by encountering the greater risk of applying the forceps. No sign, however, of the child's death, which is usually enumerated by systematic writers, can be relied on in cases where it is most important to attain this knowledge, in those cases namely, where the child was known to have been alive* at the commencement, but in which it has probably been afterwards destroyed by the severity of the labour, and where from the difficulty of the case we are unwilling to risk applying the forceps without feeling assured that we are putting the powers of the mother to the danger and suffering of a severe forceps' delivery, for the sake of a living child. The use of the stethoscope is the only available means of diagnosis, and the researches of Dr. Kennedy in his work on this subject alluded to in Pl. XXXII. are of great importance, and show that in experienced hands, its indications may be relied upon to a very great extent. "Where almost every acknowledged sign of the child's death has been present, where there has been a sensation of a heavy weight rolling about the abdomen as the patient moves or turns, when in all previous labours the children have been born dead, and from such a repetition of all former symptoms the patient has felt convinced that she should be again exposed to the disappointment of bearing a dead child, the stethoscope has brought to her the glad and certain tidings of her infant's life, and the result of the labour has proved the correctness of its diagnosis. Even when the prolapsed cord has been felt with such an uncertain trace of pulsation, that it could scarcely be felt by the finger, the fœtal pulse has been heard, the forceps have been applied, the child delivered and resuscitated. On the other hand, where the general appearance of health, the firm full breasts, the entire absence of uterine flaccidity and sensation of a weight rolling about the abdomen, and every other symptom indicated that the child was alive, the absence of fœtal pulsation has given warning of its death, and the labour has been terminated by the birth of a dead child, which from its appearance had ceased to exist for some time previously." (British and Foreign Medical Review, p. 98, vol. 1).

Fig. 2. Pelvimetur is the name applied to an instrument, employed as a means of ascertaining the dimensions of the pelvis. A figure is given of one of the latest inventions, of which there are several. They are, however, only capable of taking the antero-posterior diameters, and the external mensuration of the pelvis, their use is often painful, and always indelicate. The best pelvimeter as M. Moreau indeed affirms, for examining the interior of the pelvis is an educated finger. The index finger can determine the extent of the sacro pubic diameter where it can reach the sacro-vertebral angle, and the inability to reach this part is adequate proof that the required diameter is of sufficient extent for natural parturition. By practice the finger can also ascertain, approximatively at least, the extent of the bis-iliac and oblique diameters, but it is especially in the appreciation of the following particulars, the curvature of the sacrum, the length of the symphysis pubis, the width of the pubic arch, the depth of the pelvis and the natural or deformed condition of its sides, the projection of the spines of the ischia, the forms of the brim and outlet, and the presence of exostosis or tumour which may encroach on its cavity, that the use of one or two fingers possesses powers superior to all other means for ascertaining the normal or abnormal conditions of all parts of the pelvis, and renders their employment infinitely more advantageous than any mechanical contrivance.—J. S. S.

* Kilian, a German writer, expresses his belief that in a number of cases in which the forceps have been said to be applied above the brim of the pelvis, there has been some delusion. Practitioners have partly from error and partly from vanity, represented cases in which the head was high up in the pelvis, as instances of the head above the brim.

* Swelling of the cranial integuments is stated as a certain proof that "the child must have been alive in the early part of labour," in a very able article on obstetric exploration in the British and Foreign Medical Review. This is contrary to the Editor's experience. The scalp tumour occurred in a case recently attended by himself, which so nearly resembled the ordinary tumour that forms on a living child, that it was scarcely, and indeed not at all, distinguishable from it when carefully examined after birth. That the child had been dead, however, before the commencement of labour, was clearly shown by the complete lividity of the cord that existed at its abdominal insertion. The labour was of one of short duration, but the liq. amnii had come away before the dilatation of the os uteri. There had also been subsidence of the mammæ and the sensation of something rolling about in the abdomen on change of position. The mode of its formation becomes obvious on reflection. That portion of the scalp which is protruded through the os uteri during its dilatation, is withdrawn from the support which the rest receives from the cervix of that organ, and offers no obstacle to the accumulation of fluids within it, while the contractions of the uterus force the blood of the child into the vessels there situated and favour the transudation of its thinner parts into the surrounding subcutaneous tissues.

Application du Forceps.

Fig. 1.

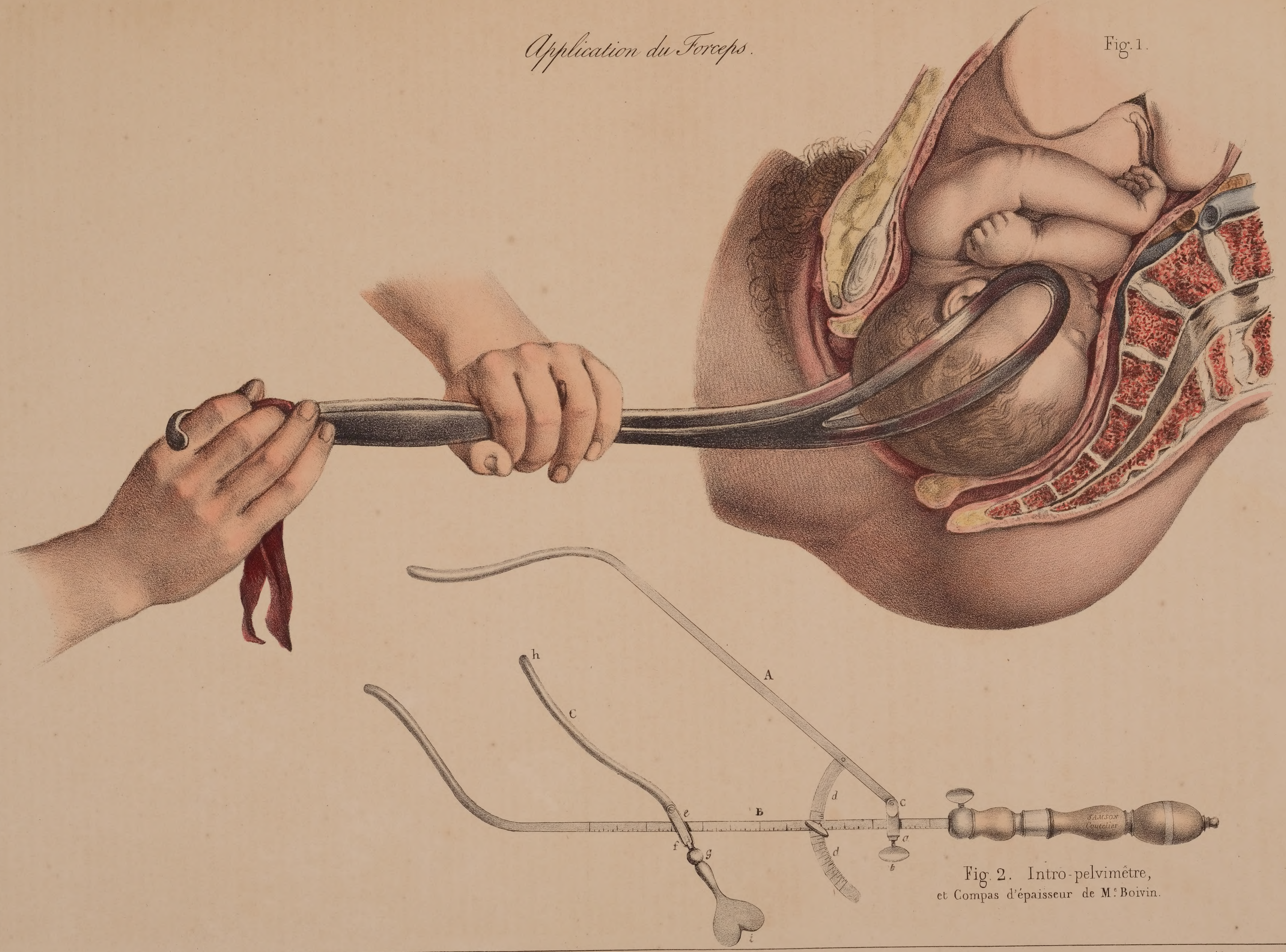


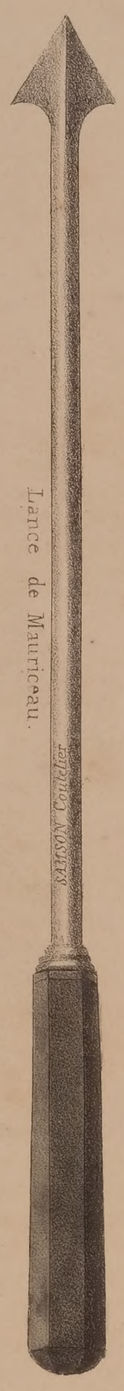
Fig. 2. Intro-pelvimètre,
et Compas d'épaisseur de M.r Boivin.

Dessiné d'après nature par Emile Beau

Paris publié par Germer Baillière.

Lith de Fourquemin.

Application du Forceps.

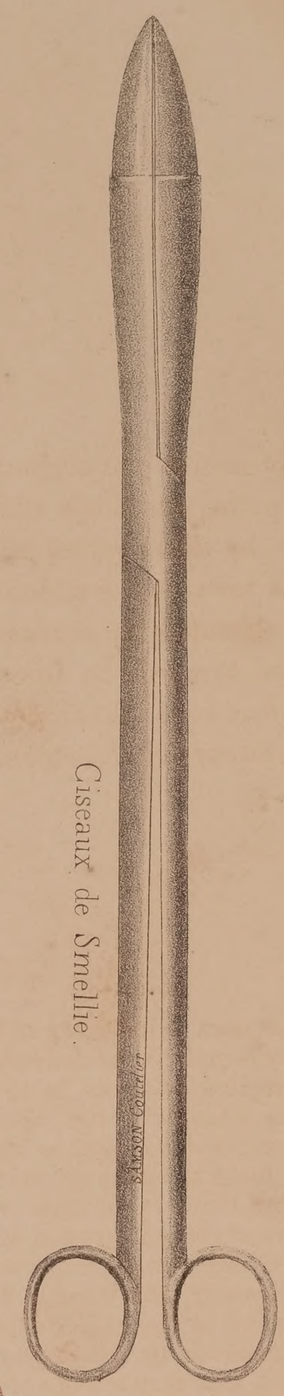


Lance de Mauriceau.

SAISON Coulelier

Fig. 2.

Fig. 1.



Ciseaux de Smellie.

SAISON Coulelier

Fig. 3.

Dessiné d'après nature par Emile Beau.

Publié par Germer Baillière à Paris.

Lith. de Fourquemin.

PLATE LVII.

ARTIFICIAL LABOUR: APPLICATION OF THE FORCEPS.

(HALF SIZE).

Figure 1.

As soon as the occiput has been brought out from under the arch of the pubis, the hands still continuing the traction and lateral movement, have by slow degrees raised the handles of the forceps, so as to bring them towards the abdomen of the mother. During this time the head has executed the movement of extension on the spine, the occiput has passed upwards in front of the symphysis pubis, whilst the forehead and face have glided down and made their escape over the posterior commissure of the vulva.

Figure 2.—The perforator of Mauriceau.

Figure 3.—Craniotomy scissors of Smellie, modified.*

* Ordinary scissors were first used by Sir Fielding Ould, in order to avoid the danger of opening the head with a scalpel. Smellie added the stops to the shoulders, so as to form the type of the perforators, which are now in common use.—J. S. S.

Remarks.—Inefficacy of labour pains, to an extent requiring instrumental aid for the completion of delivery, when the pelvis is normal and no morbid affection or complication exists, is of rare occurrence provided the woman has been judiciously managed in the early part of the labour. As Dr. Joseph Clarke observes, "since it became usual to keep women in labour in a cool atmosphere, to prevent them making voluntary exertions during the dilatation of the os uteri, and to support them by mild instead of stimulating nourishment and medicine, the powers of the constitution fail but seldom in expelling the fœtus *where there is no material defect in the formation of the pelvis.*" The expulsive powers of the uterus are, however, like those of other hollow organs, occasionally so far impaired or suspended by disease in its tissues, by sympathy with other organs and the system in general, or by the improper exhibition of Opium* after the labour has commenced, that they are unable to complete the process before symptoms of danger from exhaustion appear. Whenever under such circumstances the os uteri is fully dilated, the soft parts relaxed, and the labour is already so far advanced that the head is nearly or quite resting on the perineum, especially if the ear can be felt and the pelvis is not contracted, the forceps and lever offer appropriate means for terminating the labour and may be successfully employed. Of late years, however, in protracted labours where the presentations are natural, the soft parts prepared to admit the passage of the child and nothing but uterine pains appear to be wanting to complete the delivery, the secale cornutum has been extensively administered. An excellent description of the powers as well as the states of labour best adapted for the use of Ergot will be found in a Dissertation on the Natural History and Medical Effects of the Secale cornutum by Oliver Prescott. (Med. and Phys. Journ. p. 90, vol. 32, 1814). This is perhaps the earliest notice of this medicine in this country and contains much valuable practical information concerning its employment. In Germany it was exhibited by midwives as early as 1688, as a remedy capable of accelerating parturition. In France, Sarmentier first announced its use as a childbed remedy in 1774, in the Journal de Physique, and Desgranges of Lyons tried it in lingering labour and published in several journals the result of his practice and observations about 1777. In America the power of ergot in expediting lingering labour was first made known in a source entitled to credence by Dr. J. Stearns in the 2nd vol. of the New York Medical Repository. In England, however, it did not come into general use till after 1820, when Dr. Merriman and Dr. H. Davies published some trials of it. Ergot is unquestionably a medicine of great power and in cautious and experienced hands is particularly valuable in the management of lingering labours, where attendance in previous pregnancies has made the practitioner acquainted with the *capacity* of the pelvis and the *uterine powers* of his patient. Its use is rarely admissable in first labours however tedious, till the process is nearly completed, when it may often be substituted, especially where the pains have been casually suspended, for the short forceps; but if there is any undue resistance of the soft parts, any malposition of the head or disproportion of the pelvis, the child is often asphyxiated and destroyed by the forcible, the violent, and the remarkably quick and uninterrupted contractions, one pain running into another without interval, which so frequently attend its employment. These circumstances may in part be owing to the unnecessarily large and uniform doses that are too commonly administered. Mr. Prescott considered that a large table spoonful of the infusion (ʒ ss. to ℥ iv.) taken every ten minutes would have the effect of increasing the vigour of the pains without producing the excessive and constant action that usually follows the ordinary ʒ ss. dose. The more recent pharmaceutical preparations of the tincture and liquor of the secale cornutum are more portable, more easily administered, and have been found equally efficacious by the Editor when properly made. Mr. Lever recommends an etherial tincture (Med. Gazette, April 4, 1840) the dose of which is m xxx to m xl usually given on sugar. These forms give great facilities for its immediate use where hæmorrhage suddenly supervenes before or after the birth of the child.

The complication of labour with convulsions, when the situation of the head and the state of the soft parts are favourable, is well adapted for the use of harmless instruments. There are few circumstances more calculated to alarm the practitioner and friends of the patient than the occurrence of convulsions during the progress of labour. Like acute epileptic convulsions in children, to which they are nearly allied, the puerperal often occur with no premonitory symptom whatever, or with such slight warnings as only to be apprehended by the watchful eye of experience. An uncommon slowness of pulse has, however, been observed to precede each returning paroxysm. They occur most commonly in strong plethoric young women with their first children and in patients previously disposed to cerebral or convulsive affection, and are often attended with stertor. The stupor is so complete and lasts so many hours, that the patient in all instances after her recovery has no recollection of the birth of her offspring. The presentation of the child is commonly natural, out of 48,379 women delivered at the Dublin Lying-in Hospital, during the masterships of Clarke, Labatt and Collins, only one case of convulsions occurred with a præternatural presentation. This was a footling case and the patient recovered. Hysterical paroxysms and hæmorrhagic convulsion must not be confounded with true puerperal convulsions. It is consolatory to know that they do not usually return in future labours. They appear to arise from some morbid condition of the excito-motory system of Dr. Marshall Hall. The fit commences with a peculiar hissing noise, produced by the patient breathing sharply through closed teeth, there is a spasmodic closure of the larynx, forcible efforts of respiration, and general spasmodic contraction of the muscles under which the brain becomes dangerously congested, if not so before, and its functions are suspended or destroyed by the circulation of undecarbonized blood within its vessels. Convulsions may occur in the later period of pregnancy, during the process of parturition or even a few days after delivery. Where they take place before or in an early stage of labour, particularly when the fits are violent and frequent and insensibility remains during the interval, the case is embarrassing, because delivery is difficult or impracticable with safety to the patient. It is always important to effect this as speedily as possible, because in the great majority of cases, the convulsions either cease altogether or terminate gradually after the birth of the child, each returning paroxysm being less severe. Any artificial dilatation of the os uteri is, however, not warrantable and, indeed, the delivery by version, has in a very large proportion of instances, about five in every seven, (Collins, p. 236) been followed by the death of the mother. Bleeding repeated according to the strength of the patient, active purgatives and enemata, the tartar emetic mixture freely given at short intervals so as to nauseate effectually without producing vomiting, ice and cold lotions to the head, are the measures chiefly to be relied upon; while proper precautions are at the same time taken for protecting the patient from injury during the paroxysm. By these measures we may hope to facilitate the dilatation of the os uteri and soft parts and to lessen the frequency and violence of the fits. The great object is to gain time and guard the female against their frequent return, or what is even of more importance against their violence. Where the forceps are applicable, but the cases are comparatively few, there are few occasions where this instrument can be used with more satisfactory results, in part, however, owing to the labour being *so far advanced* as to admit of this mode of delivery. The crotchet should only be resorted to in extreme necessity. Next to the mother's life that of the child

* The use of opiates at any time during pregnancy, and especially during parturition, requires great judgment and practical tact. After the bowels have been properly opened their exhibition is often attended with the greatest benefit, but the circumstances and idiosyncrasies which limit their use in all cases of disease, must never be forgotten. Given to allay the spasmodic pains that precede the commencement of labour and which are not attended with any dilatation of the os uteri, their effect is often highly beneficial, but so soon as the labour has really commenced, their exhibition is most commonly injurious and often deranges or stops the uterine contractions altogether. Three cases occurred within Dr. Merriman's knowledge "in the practice of a midwife much in the habit of giving laudanum freely" where an entire suspension of uterine action, requiring the aid of instruments to effect delivery, was produced. Each of these patients had previously taken laudanum to relieve the spurious pains, and had been benefitted, but its exhibition was injudiciously continued, when the pains which had for a long time been *lingering* were just becoming effective. (Synopsis p. 26, 1820). In a similar case where laudanum was given to facilitate version, the power of uterine contraction was so completely destroyed, that the woman sunk from flooding in spite of all efforts to rouse the uterus into action. (P. 237). Good effects, however, not unfrequently follow the administration of a single dose, where great irritability and general exhaustion of the nervous system is induced by the protraction of the labour. Under such circumstances it will often remove the anxiety and uneasiness which exist during the intervals of the pains, even when it fails to produce sleep. "Every person," observes Dr. Brien, "accustomed to observe the progress of tedious labour must have taken notice of a tendency in the action of the uterus to be partly suspended and again renewed. I would almost go the length of saying that something like critical hours may be observed. By endeavouring to time the administration of an opiate with the tendency of the uterus to cease its action, I think I have observed that degree of refreshment procured, that in a labour, where it was apprehended the patient should be delivered with instruments, uterine action again commenced with vigour in the course of a few hours and the child has been expelled by the efforts of nature. (Ed. Med. and Surg. Journ. p. 169, vol. 15, 1819). It is worthy of remark, that ergot, according to the experience of the Editor, has little or no influence in restoring the contractile powers of the uterus when they have been suspended by opium. Ergot has no antagonizing influence over the anti-contractile effect of opium, although opium has over that of ergot. The exhibition of opium is extremely beneficial in allaying the severe contractile pains of the uterus called into operation by ergot, and which are frequently continued and occasion severe distress long after the expulsion of the placenta and the danger of hæmorrhage has ceased.

should be attended to, and the use of the stethoscope is here of incalculable value as a means of detecting the continuance of its life or *its death,* at an early period after the occurrence of the fits.

"There are few cases," says Dr. Collins, (from whose admirable work a large proportion of the practical precepts recommended throughout these remarks have been taken) "that require more prompt and decided practice than puerperal convulsions. The experience of most individuals is insufficient to enable them to draw satisfactory conclusions from what they have themselves seen, therefore every contribution is beneficial." The following tabular view of 144 cases, occurring in the hospital or consultation practice of four eminent individuals, will furnish many important data alike useful for reflection and guidance in the management of labours attended with this formible complication.

TABLE ILLUSTRATING LABOUR COMPLICATED WITH CONVULSIONS.

Authority.	Number, nature and termination of cases					Period of first attack			Nature of delivery					Children and kind of presentation					
	Women	Died	Single births	Twins	First pregnancies	Before the labour	During the labour	After	By natural efforts	Artificially	Version	Forceps	Crotchet	Children	Children saved	Vertex	Breech	Feet	Upper extremity
Dr. Jos. Clarke.	19	4	15*	4	16	17		2	10	9	none	3	6	23	not stated	23	none	none	none
Dr. Rob. Collins	30	5	28	2	29	4	24	2	15	15†	none	6	8	32	14	31	none	1	none
Dr. Merriman	36	8	34	‖2	28	33		3	18	18	3	7	8	38	13	36	none	none	none
Dr. F. H. Ramsbotham	59	13	56	3	45	17	28	14	38	21‡	5	6	6	62	23	58	4	none	none
Total	144	30			118				81	63	8	22	28						

* Erroneously printed 14 in Pl. XLVIII.
† Including the footling case where manual assistance was given.
‡ Including the four breech cases. It is presumed but not positively stated, that manual assistance was given.
‖ In one case the attack came on between the birth of the first and second child.

Application du Forceps dans la position occipito-cotyloidienne gauche

Fig. 2.

Fig. 3.

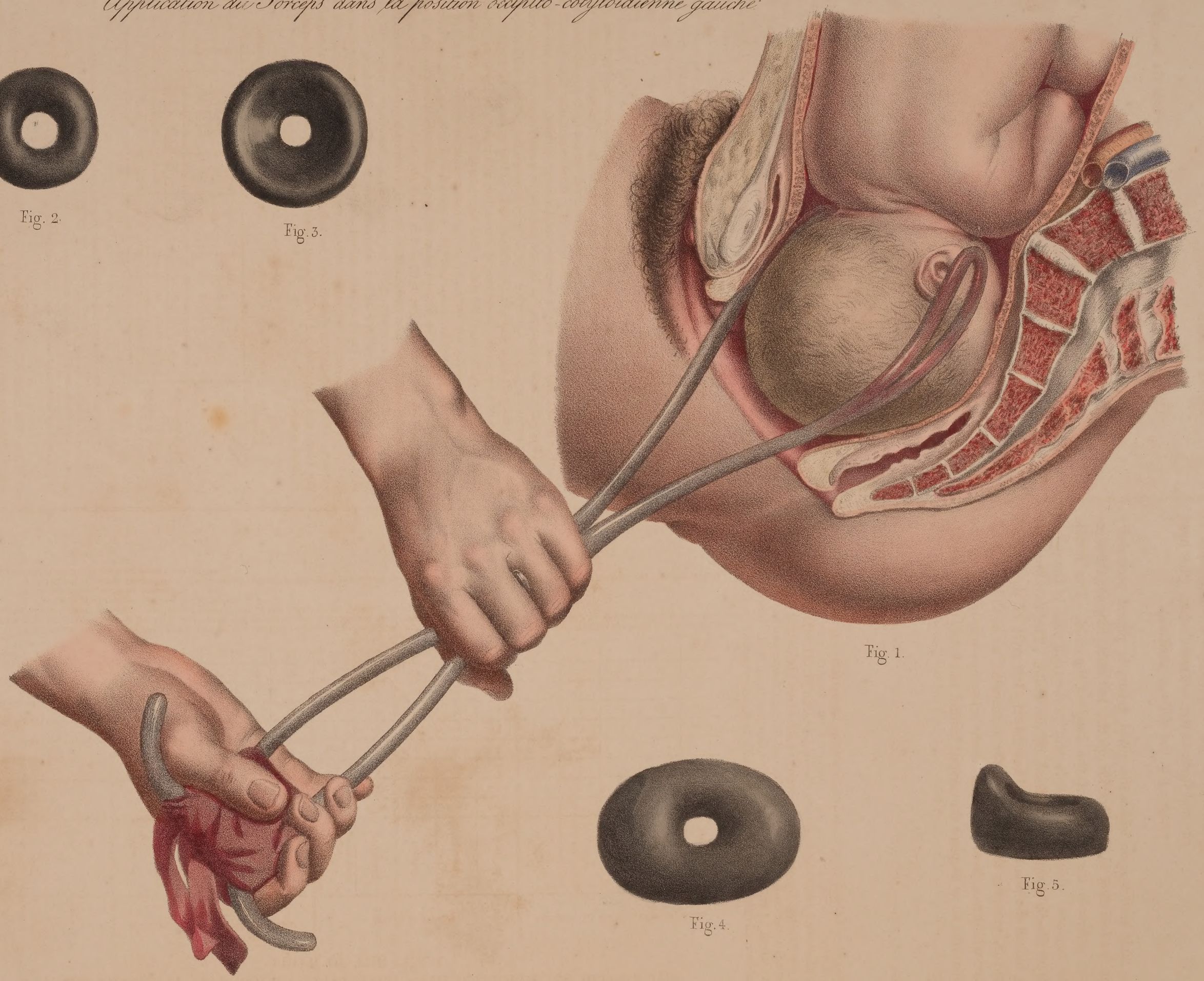


Fig. 1.

Fig. 4.

Fig. 5.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière A Paris. Lith. de Fourquemin

PLATE LVIII.

ARTIFICIAL LABOUR: APPLICATION OF THE FORCEPS.

(HALF SIZE).

Figure 1.—Application of the forceps when the occiput is situated towards the left acetabulum (the head remaining in the oblique position).

The male branch upon which the pivot exists, is placed posteriorly and on the left side, in the direction of the left sacro-iliac synchondrosis, and embraces the left side of the head of the child. The female branch is placed obliquely forwards and to the right side of the pelvis and upon the right side of the head of the child. The two branches being locked the pivot is directed towards the left groin of the mother. The hands, grasping the handles of the instrument, so as to bring them together will direct them obliquely from below upwards and from the left forwards, so as to place the occiput behind and below the symphysis pubis.

Figure 2.—Ring pessary.

Figure 3.—Ring pessary, hollowed out towards the centre.

Figure 4.—Oval-shaped pessary.

Figure 5.—Pessary with a projecting border, invented by M. Moreau, and first used by him for certain cases of anteversion and retroversion of the uterus.

Remarks.—Labour complicated with uterine hæmorrhage occasionally requires the employment of the forceps, as a means of effecting delivery; but the whole subject has been so fully alluded to in the Remarks on Pl. XLVIII as to require no further observation, except as to the rarity of the cases. In only 2 out of 192 instances the os uteri was sufficiently dilated, and the head descended low enough in the pelvis to admit of their application. The following table will, however, furnish many additional data and serve as an appendix to former remarks on this subject.

TABLE ILLUSTRATING LABOUR COMPLICATED WITH HÆMORRHAGE BEFORE THE BIRTH OF THE CHILD.

Authority	Number, nature and termination of cases					Nature of delivery					Children				
	Women	Accidental	Unavoidable: Complete placental	Unavoidable: Partial placental	Died	Natural efforts and Rupture of membranes	Artificially	Version	Forceps	Crotchet	Children	Vertex	Breech or footling	Transverse	Children born alive
Dr. Rigby	85	51	34		none	none	none	none	none	none					
					9	none	34	34	none	none					
Dr. Joseph Clarke	14	10	4		4	4	6	5	none	1					
					1	none	4	3	none	1					
Dr. Robert Collins	24	13	11		2	7	6	2	none	*4	13	11	2		6
					2	1	10	4	1	2	11	8	1	1	6
Dr. F. H. Ramsbotham	69	25	—	44†	2	23	2	2	none	none					
					8	13	30	29	1	none					
Total	192	99	93		28	99	92	79	2	8	24	19	3	1	12

* Including one case where the feet presented and the face was turned to the pubes Great difficulty was experienced in extracting the head in consequence of the arm being twisted round the back of the head and eventually the crotchet was employed. The difficulty which the arm was so situated offers to the completion of the delivery in version cases is ably pointed out by the Editor of Lachapelle, vol. 1, p. 307.
† The mode of delivery of one case is not stated.
‡ All delivered by manual assistance.
§ Dr. R. remarks that most of these præternatural presentations were premature labours and that even in complete placental presentations a præternatural position of the fœtus is more frequent than ordinary.

Dr. Evory Kennedy uses the plug where the edge of the placenta overlaps the os uteri, in order to restrain the hæmorrhage during the time we are obliged to wait for dilatation of that orifice. He carefully introduces a piece of sponge *between the head of the child, and the amnial surface of the placenta,* thus pressing the placenta against the neck of the uterus and closing the mouths of the shedding vessels. The sponge acts as a compress until the head descends, makes additional pressure, and more completely restrains the flow of blood. By this means the hæmorrhage has been completely checked in several patients, and they have been delivered of living children without the necessity of turning or other interference. Whenever this plan of plugging is adopted, Dr. Kennedy cautions us to watch the patient closely, and if the circumstances of the mother or child require, to have recourse to version or the forceps without delay. (Dublin Journal, P. 153. Vol. 16).

Prolapsus of the funis is a complication of labour which occasionally, though rarely, admits of the use of the forceps as a means of saving the life of the child. One species of the heterogeneous order of complex labour is produced by the descent either of an upper or lower extremity, or of the umbilical cord by the side of the really presenting part of the child, whether this is the vertex, the breech or the shoulder. Either an upper or a lower extremity may descend singly, or be combined, the one with the other or with the cord. The descent occasionally produces impaction, but more commonly it takes place in large pelves and though it may retard, proves no material obstacle to the passage of the child. The prolapsus of a hand before the head is important because it is so liable to be confounded with shoulder presentation, as has been already alluded to in the Remarks accompanying Pl. LI. When early detected, the prolapsed hand may occasionally be returned during the absence of the pains, and supported above the brim of the pelvis by means of one or two fingers, or a piece of sponge or cotton wool wedged in the pelvis till the head has cleared the upper aperture. Mr. Barlow (Essays on Surgery and Midwifery, London, 1822) completely succeeded in replacing the hand in several instances and he also attended three cases where both arms prolapased, and yet the delivery was terminated without injury either to mother or child. Prolapsus of the funis is of great danger to the child because reposition in the manner just described, although occasionally successful (Barlow, id.) more commonly fails as well as all other means that have as yet been devised for its protection. These consist in: 1st. Reposition and supporting it by the hand or by means of sponge or cotton as above mentioned. 2nd. Carrying up the funis through the os uteri with the hand and suspending it on a limb of the child. 3rd. Drawing down as much of the prolapsed cord as possible, collecting it into a bag and then pushing it up beyond the head. 4th. Returning the funis into the uterus by instrumental means.* Reposition occasionally succeeds, but in the majority of instances the funis is no sooner returned in one direction than it is forced down in another. Artificial delivery by version and the forceps have also been recommended and practiced, particularly in the French Hospitals, but the risk the more valuable life of the mother sustains in the delivery of the child by this operation is great and so entirely owing to actual interference that the practice of version is rarely, if ever justifiable. The forceps are, indeed, desirable whenever the child is so situated that the head can be reached with safety; but as the funis generally descends at the *commencement* of labour, they can rarely be applied till fœtal life is extinct. When employed care should be taken not to include the funis between the blade and the head. The following table will convey additional information in brief space.

Authority	Women 16414		Twins 240		Children 16654			Prolapsus of funis 97*	
			Total	Born alive	Vertex	Hand with head	Breech	Feet	Shoulder
Dr. R. Collins									
Single pregnancy			85	†19	‖65	5	2	9	4
Twin pregnancy	12	1st child	5	‡2	3		1	1	
		2d child	7	‡1	4	2		1	
		Total	97*	§22	72	7	3	11	4

* In twenty-two, pulsation had ceased in funis when the prolapse was first discovered.
† Thirteen vertex, four feet, one shoulder, one hand with head.
‡ One vertex, one feet, one breech.
§ Five were saved by reposition of the cord.
‖ In one only was the head low enough for the forceps to be applied, but pulsation ceased in the cord before the delivery could be effected and the child was irrecoverable.

When the child is dead no advantage can result from allowing the patient to endure the pain and distress of labour for hour after hour which must be accompanied by some risk, when by lessening the head the labour may be terminated with facility.

Malposition of the head is another cause of difficult labour, which occasionally necessitates the use of the forceps. This however has been already made the subject of remark, when speaking of the mechanism of labour and of the fronto-cotyloid and face presentations (Pl. XXXIV). Malposition of the head generally occurs in pelves that are naturally capacious and is usually overcome by the unaided powers of the uterus, unless these have been weakened by disease or the malposition of the head is associated with disproportion also. Where arrest takes place from this cause, one blade of the forceps or the lever will often be sufficient to effect the delivery.

* One of the most ingenious of these consists in retaining the prolapsed funis at the extremity of a long gum elastic catheter by means of soft twine, carrying this as far within the uterus as possible during the absence of pain, and then withdrawing the stilette and leaving it there.

PLATE LIX.

ARTIFICIAL LABOUR: APPLICATION OF THE FORCEPS ABOVE THE BRIM.

(HALF SIZE.)

Figure 1.—Application of the forceps above the brim.

The head of the fœtus, having the occiput above the symphysis pubis, and the forehead above and in front of the promontory of the sacrum, is grasped by the forceps. The branches are joined together, and the degree of pressure is fixed. The right hand holds the forceps at the extremity of the blades, and above their hooks; the left hand is placed above the point of junction, and has the index finger placed between the blades, and extended, so as to touch the head, to enable the operator to judge of the effect of the different motions which are about to be made.

Figure 2.—Cylindrical pessary.

Figure 3.—Another variety of cylindrical pessary.

Figure 4.—Annular pessary, supported by three stems which unite to form one, used for the same purposes as the cup-shaped pessary.

Figure 5.—Front view of M. Moreau's pessary for retroversion of the uterus.

a. Superior extremity of the instrument, which is to be placed between the cervix uteri and the hollow of the sacrum, to fill up the space into which the fundus and body of the organ fall in that displacement.

b. Inferior or vaginal extremity.

c, c. Ring made incomplete to lodge the neck of the bladder.

Figure 6.—Same pessary as fig. 5 seen laterally, so as to show its curve.

M. Moreau uses an analogous pessary in cases of anteversion, but makes it longer, and curves the shank which unites the two extremities, in the opposite direction. The ring at the vaginal extremity is also complete.

Remarks.—Disproportion between the capacity of the pelvis and the head of the child is by far the most serious cause of difficult and protracted labour, and is certainly the one which most frequently renders instrumental interference necessary. The disproportion may arise from various causes on the part of the parent, as arrested development of the whole pelvis, its original construction on a small scale (Pl. VI); the presence of fibro cartilaginous tumours, exostosis, the previous occurrence of fracture, &c. (Pl. XI, XII); or deformity from rickets (Pl. X); mollities ossium,* or that synostosis which accompanies an imperfect developement of the sacrum and ileum, and constitutes the oval-oblique pelvis of Naegele (Pl. IX, fig. 2). The malformation or deformity of the pelvis may exist at the brim, in the cavity or at the outlet. It may arise from a projecting promontory or a diminution of the hollow of the sacrum, from protrusion of the spines or approximation of the tuberosities of the ischia, from anchylosis of the coccyx, or want of space in the pubic arch (Pl. V—XV). On the part of the child it may be owing to hydrocephalus, an unusual degree of ossification of the bones or excessive size of the cranium itself.

From whatever cause the disproportion may arise, it is only when slight and combined perhaps with some inertia, or when there is a partial deformity which leads to malposition, and which arrests without impacting the head, that it admits of the use of the forceps or lever, without the probability of contusing or lacerating the internal or external parts of the parent to such an an extent as to place her life in immediate danger or render her future existence one of misery. No consideration but *necessity* will ever justify interference by the forceps or any other instrument. In order to decide upon the necessity of such interference, the state of the os uteri, the degree and character of the uterine action, the relative size and situation of the head, the length of time it has remained stationary, the entire duration of the labour, the pressure on the soft parts particularly the urethra and bladder, the degree of permanent pain in the uterus and abdomen, the obvious impression made on the system, the age, constitution, and mental state of the patient and the probability of the life or death of the child must be separately and collectively considered, "It becomes us, however, to be exceedingly cautious," observes Dr. Merriman, "not to suppose upon light and insufficient grounds that the distortion is too great to allow the child to pass without the intervention of instruments, and particularly when there is a question about employing the *perforator* an instrument always incompatible with the life of the child, we ought to weigh every circumstance very carefully in our minds and *if possible procure the opinion of some other experienced practitioner* before we determine upon having recourse to it. The maxim of the stern satirist,

Nulla unquam de morte hominis cunctatio longa est,

applies not only to the adult, but to the infant in the womb, a human being yet unborn is entrusted to our especial care and protection; and when its existence depends altogether upon our decision, we ought not to decide but with the greatest deliberation and wariness." P. 50.†

When a patient is properly managed and her powers judiciously supported by mild unstimulating nourishment during the earlier part of the labour even when disproportion exists, the reiterated contractions of the uterus will often gradually elongate, and mould the head to the available space which the pelvis offers, and if the powers of the uterus are only exerted at intervals, the child will ultimately be protruded alive, where even the introduction of the "forceps or lever would do so much violence as to injure the parent and destroy the child." This favourable termination to both parent and child, will not, however, usually take place where the pains are naturally unceasing and run into each other without intervals or have been made so by an unreflecting or excessive exhibition of ergot. Here the child is usually destroyed as in arm presentations by the severe and long continued pressure to which it is subjected. The employment of ergot in cases of arrest from disproportion between the osseous structures of the mother and child is highly dangerous to the life of the latter, and almost always less eligible than embryospastic instruments where the head has descended low enough and there is sufficient space for their introduction without force. It may, however, be used occasionally as a means of bringing the head within reach of the forceps. The forceps, the lever, and the ergot are most valuable means of accelerating delivery with safety to both the child and the mother when used with judgment and care; but adopted unnecessarily from impatience, or as a means of acquiring a reputation for dexterity, and without due discrimination in cases to which they are respectively inapplicable, they become highly mischievous and lead to such distressing and fatal results,* that many as well as Dr. Breen have "doubted whether society has been more benefitted or injured by the inventions of the forceps and lever." (Ed. Med. and Surg. Journ. p. 27, vol. XIV, 1818) and the same remark will equally apply to the secale cornutum. Finally it may be observed that the more educated and the more experienced practitioners become, the less disposed they usually are to interfere with the processes of

* Two engravings of pelves so deformed by mollities ossium, after the women had given birth to living children, as to require the Cæsarian section in future labours may be seen Ed: Med: and Surg. Journal: Vol. XII. and Memoirs of the Medical Society of London, Vol. V.

† Well as it has been said that by want of sleep and anxiety and uninterrupted attention to one subject, the mind becomes fatigued and loses its healthy tone, like a spring which has been overbent. Hence it is not uncommon for the medical attendant to experience a temporary loss of what Cicero calls, the *robur animi*, and his judgment being thus impaired, he becomes less fit to decide on the propriety of an important operation than when he first entered the apartment of his patient. To a person so circumstanced, the comfort and advantage resulting from the friendly advice, and co-operation of an experienced professional friend are abundantly apparent." Med: Chir: Rev: P. 529. 1820.

* "I wish" said Sir C. Bell, that my present subject permitted me to state, what I have found on dissecting the parts after the use of the crotchet, and in particular where the forceps had been used, as I presume, in a case improper for them. The injury which the seeming harmless instrument, the forceps, is capable of doing, might then be proved, and a wholesome admonition given to young surgeons." (Paper on the Muscles of the Uterus, Med. Chir. Trans., (P. 336. Vol. IV.)

Mr. Gaitskell, Senior, of Rotherhithe, has recorded the case of a female who had suffered laceration of the perineum, of the neck of the urinary bladder and rectum, from a wanton and unskilful application of the Lever. (Med. Repository, Vol. XX. P. 378. 1823.) "Twelve months after this extensive injury, she informed him that she was totally deprived of sexual sensation, that the prolapsus of the uterus and vesica urinaria was increased, and attended with pain and a sense of weakness in her loins, and that she had no retentive power in the rectum." Let the practitioner, he feelingly adds, "weigh well in his mind all the minute circumstances of his patients situation, and be well convinced of the necessity of such interference, before he dares to hazard the awful responsibility of introducing an instrument into the womb of a parturient woman, and of forcibly extracting the child. That the life of a female, at this interesting period of her existence should be put in jeopardy, or that she should be condemned to years of misery, from impatience of temper in the practitioner, or from gross ignorance of his professional duty, is a subject of moment to every mind, which is interested in the credit and respectability of this department of medical practice." Surgical practice is for the most part undertaken by men who have passed through voluntary, or legally prescribed tests of competency in the countries in which they live, and its operations are usually performed with all possible preparation and in the presence of other practitioners who can perceive the steps, and are capable of judging of the propriety of the proceedings. The public are thereby ensured against incompetency, and to a certain extent though not wholly against rash, inconsiderate and experimental operations, but in obstetric practice, where the welfare and life of the patient are so immediately dependant upon the measures adopted by the medical attendant, the case is different. There is on many occasions no time for delay, and obstetric operations are required and performed in situations the most inconvenient, and with assistants so prejudiced and ignorant, that the operations require unusual nerve and presence of mind, and admit of little responsibility beyond what the intelligence, and the conscientious and humane feelings of the practitioner supply. For his own sake he will seek consultation, where the special occasion for interference admits of delay, but in hæmorrhage, convulsions, placenta prævia, arm presentations, or the rapid supervention of fever or inflammation, the early adoption of the requisite measures is as often necessary to the patient's safety, as the measures themselves.

Application du Forceps au dessus du détroit abdominal.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 6.

Fig. 5.

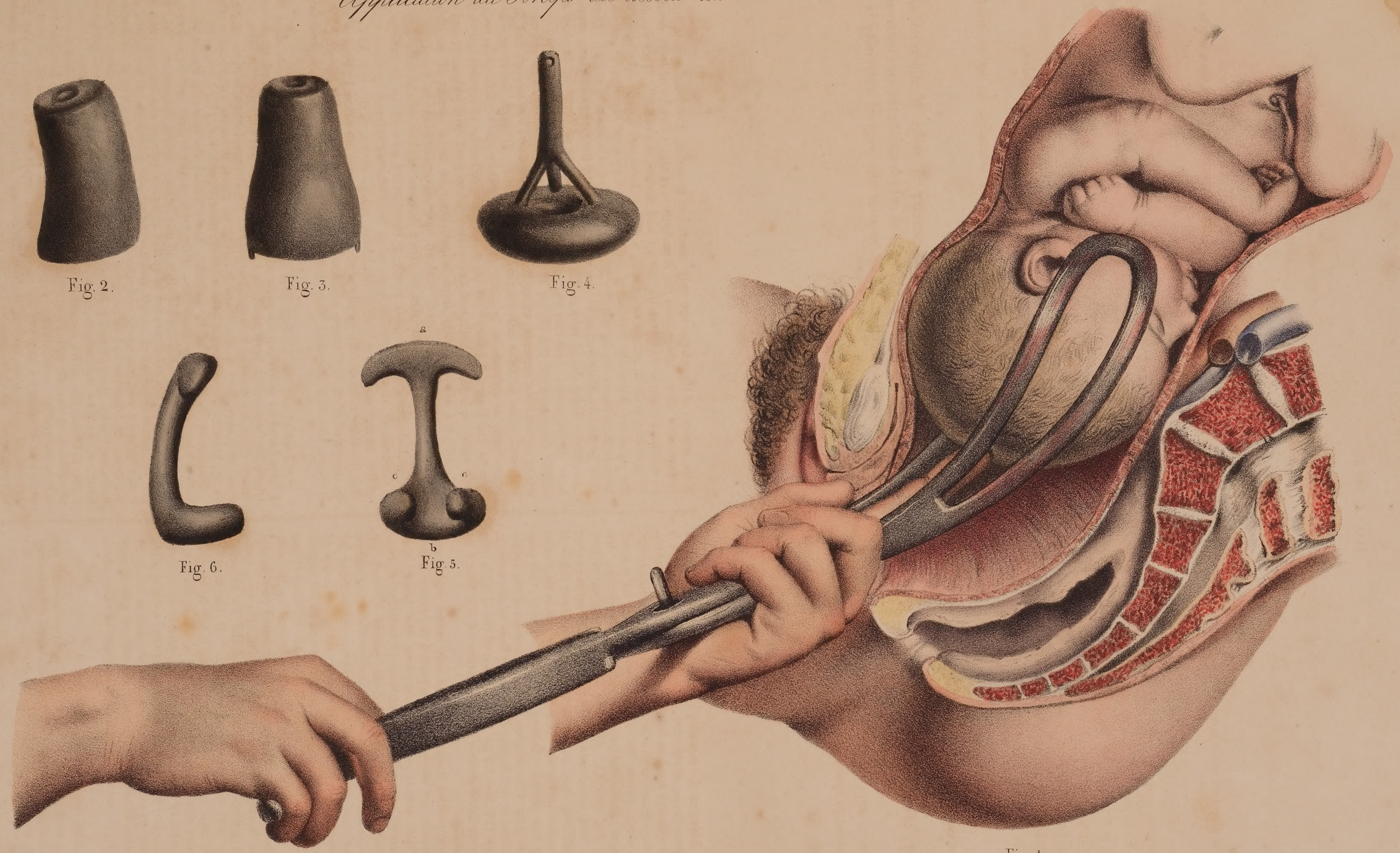


Fig 1.

Dessiné d'après nature par Emile Beau.

Publié par Germer Baillière à Paris.

Lith. de Fourquemin

Application du Forceps.

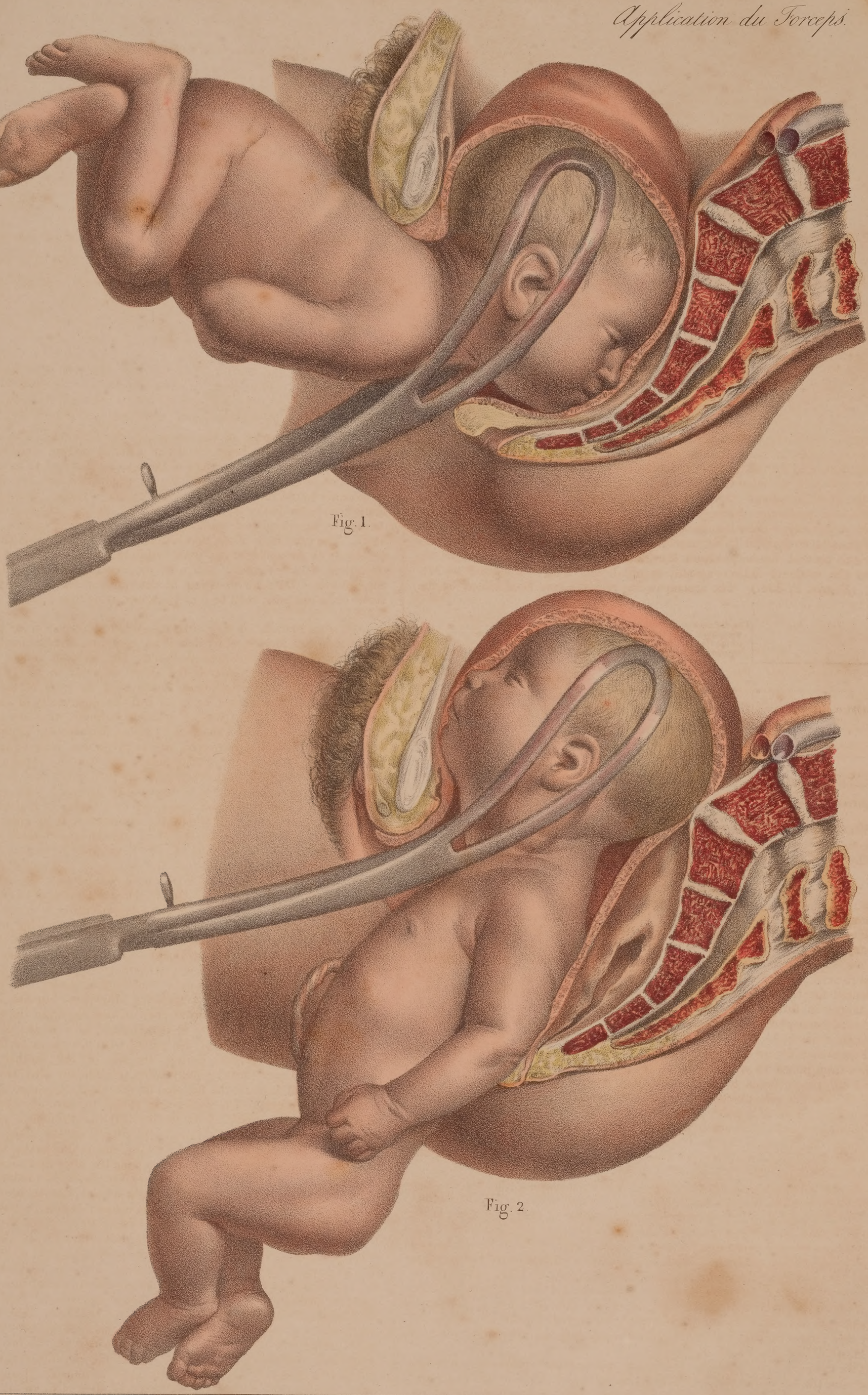


Fig. 1.

Fig. 2.

Dessiné d'après nature par Emile Beau. Publié par Germer Baillière à Paris. Lith. de Fourquemin

PLATE LX.

ARTIFICIAL LABOUR, APPLICATION OF THE FORCEPS.

(HALF SIZE.)

Figure 1.

Application of the forceps, when the body of the fœtus has been expelled and the head is fixed in the cavity, with the face in the hollow of the sacrum and the occiput behind the symphysis pubis.

Figure 2.

Application of the forceps, when the body of the child has been expelled and the head is fixed in the brim, with the face behind and above the symphysis pubis and the occiput in front of the promontory of the sacrum.

Remarks.—The application of the forceps in the opinion of the editor is wholly inapplicable in the instances represented in this plate, because the child is already destroyed by the pressure exerted on the funis, during the time which has been occupied in diligent efforts to extract the head by manual efforts. When the child is actually dead, it is better practice to lessen the head, by introducing the perforator through the occiput, which is safer for the mother, than forceps delivery.—(See Remarks on Pl: XLIII.)

The following Synoptical Table, exhibiting at one view every possible deviation betwixt the natural dimensions and the greatest possible degree of distortion, and also the mode of delivery usually required, has been constructed by Mr. Barlow, (Essays, P. 354.) The accompanying remarks have been added by the Editor.

	The distance of the upper edge of the symphysis pubis to the superior part of the os sacrum, or conjugate diameter of the pelvis.	
(a) Well formed pelvis	From 5 to 4 inches	Delivery by the efforts of nature alone
1 (b) First degree of deformed pelvis	From 4 to 3 or $2\frac{3}{4}$ inches	Delivery by the efforts of nature or assisted by the forceps and lever
2 (c) Second degree	From $2\frac{3}{4}$ to $2\frac{1}{2}$ inches	(d) Premature delivery
3 (e) Third degree	From $2\frac{1}{2}$ to $1\frac{1}{2}$ inches	(e) Embryulcia or delivery by the crotchet
4 (f) Fourth degree	From $1\frac{1}{2}$ to the lowest possible degree of distortion	(f) Cæsarian operation

(a) Well-formed pelvis.—By this term is meant a pelvis, which offers no obstacle to the birth of the child. Perfect symmetry and proportion to the rest of the body, is as rarely met with in the pelvis as in the cranium and thorax, and the sacrum has been, moreover, considered liable to more variation than any other bone in the body. Minor deviations from the standard pelvis, probably depend upon an arrest, an exaggeration, or an inharmonious degree of development of the centres of ossification of the individual bones. The extreme rarity of regular well proportioned and symmetrical pelves, has been particularly demonstrated by the observations of Naegele the younger, and by those of Otto of Breslau. Naegele collected fifty pelves from women, who during their lives had experienced no difficulty in childbirth, without being able to find a single one adapted for the description of the regular pelvis. Otto found the same circumstances in forty-five, which he collected successively during one year. The external mensuration of the pelvis in eighty living women by M. Danyau, gave similar evidence.

(b) First degree of deformity.—Dr. Joseph Clarke of Dublin, states that $3\frac{1}{4}$ inches from pubes to sacrum was the smallest space through which he had known a full grown fœtus to pass entire, and in this instance the fœtus was putrid. Where the pelvis measures less than three inches from pubes to sacrum, he is of opinion, that it is good practice to perforate the head at an early period of the labour; and leave it some hours to be forced into the pelvis by pains, before the crotchet is applied. In 10,000 cases, only forty-nine ill-formed pelves were observed. The possibility of an usually small or compressible head should not be forgotten.

(c) Second degree of deformity.—A pelvis measuring $2\frac{1}{2}$ inches only from pubes to sacrum, was the most defective ever met with by Dr. R. Collins in the Dublin Hospital. The elbow presented, and was at first taken for a knee. The body became so wedged in the pelvis that version was impracticable; the thorax was accordingly perforated, and the breech brought down with immense difficulty owing to the deformity. Laborious exertion was required for $2\frac{1}{2}$ hours to complete the delivery, and this was only accomplished by taking the child to pieces. Death ensued in four hours. A considerable laceration was found between the cervix uteri and vagina, on the right side. (P. 303.) The particulars of a second arm case, complicated with this degree of deformity and where delivery was impracticable, will be found recorded with an instructive plate in Guy's Hospital Reports, Vol. I. P. 328.

(d) The induction of premature labour, was originally proposed as a means of preserving the life of the child, "under circumstances, and in situations preventing the successful use of the vectis or forceps; and just compelling us, as Denman observes, to the fatal measure of lessening the head." The operation was at first strongly opposed, and its safety and propriety called in question, on medical and moral grounds. These circumstances are now, however, very generally admitted, and it is performed and practised with the most happy results. The induction of abortion or premature labour, as the case may require, has also been proposed of late years, with the sole view of preserving the mother, in pregnancy complicated with uterine tumour (See Remarks, Pl. 20); as a means of rendering embryulcy possible, where the Cæsarian operation would be inevitable at the full period; and in certain diseases caused by, or co-existing with pregnancy, which are immediately endangering her life, as uncontrollable vomiting with alarming exhaustion, dropsical effusions threatening suffocation; &c. No general rules can be laid down for these cases, but the decision must rest with the judgment of the attending practitioners. The operation should, however, in no case be undertaken without mature consideration, and the fullest consultation and statement of the reasons that lead to its adoption.

The means generally employed for its production are 1st. Separation of the membranes round the os uteri to some extent. 2ndly. Rupture of the membranes, so as to discharge the liquor amnii. 3rdly. Dilating and irritating the os uteri by inserting and confining a piece of sponge within that orifice, and 4thly. The exhibition of the Secale Cornutum. These means have been employed separately or in combination, with certainly less danger to the mother than the operation of embryotomy, and with the beneficial result of saving about half the children. Data for assisting in determining the latest period at which a *viable* child can pass, will be found accompanying the remarks on Pl. VII. and XXXI.

(e) Third degree of deformity.—Where the space from pubes to sacrum is less than two inches embryulcia is an operation of considerable difficulty, and one requiring great care and dexterity, Dr. Osborne indeed delivered in one instance, where he considered the short diameter to be $1\frac{3}{4}$ inches, and the longer not more than two inches, by turning the basis of the skull sideways; but as the patient recovered, he never had the opportunity of clearly ascertaining the real dimensions. He was of opinion, however, that the crotchet should be tried wherever there was a space of $1\frac{1}{2}$ inches from sacrum to pubes. Dr. Clough delivered a woman that recovered, whose pelvis was believed to have little more than $1\frac{1}{2}$ inches space between the pubes and sacrum, (Med: Repos: Vol. II. 1814.) The operation itself when carefully performed, and the deformity is not excessive, does not seem to be necessarily attended with very great danger, because it has frequently been undergone two, three, or four times, by the same woman with impunity; but where the contraction is so great as not to leave a clear space of two inches in the short diameter, and three and a half in the longest, though the distruction of the fœtus may be accomplished effectually, the records of medicine attest that the prolonged and powerful efforts, required for its extraction by the most experienced hands, have generally been followed by the death of the patient. Dr. D. D. Davis conceives that the fœtus can be mutilated by his osteotome, so as to be extracted with safety to the mother, through a pelvis which presents about one inch of space, but as yet the Editor is not aware of its having been successfully applied in any case of great deformity. It is a powerful mechanical instrument, combining the principle of the wedge and scissors, a sort of double punch which exerts great power over any portion of bone placed within its grasp, and thereby renders unnecessary, the exertion of violent extraction with the crotchet. (Operative Midwifery, London, 1825.)

(f) Fourth degree of deformity.—Cases requiring the Cæsarian operation are of two kinds, first, where it is performed as a means of saving the child, immediately after the death of the parent from disease or accident, and secondly, where it is performed during the life of the mother. The operation in the first instance must be undertaken immediately after the maternal circulation has ceased, because the function of the placenta cannot abate till the action of the lungs begins. Dr. Jackson is stated to have recovered an infant half an hour after the death of its mother, (Burns Principles of Midwifery,) but this is longer than the possession of vitality in the child can be calculated upon generally. Mr. Hugh Carmichael informs us that in two instances where the child was removed in less than fifteen minutes after that event, it was perfectly dead, and in Dr. Ireland's case, where the death of the mother arose from a blow, when the child was exposed eight or ten minutes after the mother's circulation had ceased, it was already sinking and required exertions to resuscitate it, but the child so saved was alive twenty-three years after. (Dublin Med: Journal, Vol. XIV.)* Its employment during the life of the mother, is only admissable where the abridgment of the pelvic space is so great as to prevent any reasonable hope of extracting the child, however mutilated, with safety to the mother per vias naturales. It is an operation, not of choice but of necessity, never to be thought of without a thorough conviction, that unless risked two lives must inevitably perish, while there is a *possibility*, that by its means both may, and a great probability exists that one will be preserved. A deformed pelvis admitting delivery by embryulcia where the vertex presents, may, if complicated with a shoulder or breech presentation constitute one of impracticable labour. Whenever this most formidable operation is clearly the only resource, the woman should never be allowed to go on making long continued and fruitless uterine efforts; because they exhaust the constitutional powers and lead to rupture, destructive local inflammation or even gangrene. This injurous delay lessens the chance of preserving the child, and has probably been the cause why the operation has been almost universally fatal in Britain,

* A highly instructive case where the Cæsarian operation was performed by Mr. J. H. Green, Surgeon of St. Thomas's Hospital, upon a woman who died in consequence of rupture of the liver shortly after being run over by a stage coach in the ninth month of pregnancy, will be found in the Med. Chir. Trans. Vol. xii. The operation was commenced thirteen minutes after the death of the mother, the child when taken from the womb was apparently dead, after fifteen minutes of artificial inflation of the lungs with a tracheal pipe, it gave signs of life and was finally resuscitated, but died the following day.

nature so long as the constitutional powers of the mother remain unimpared, and they seldom employ instruments except where the powers of the uterus have by a patient and careful trial been obviously proved unequal to the task.

The propriety of interference having been determined upon, it remains to enquire which is the preferable instrument to employ, the lever or the forceps. The prevailing opinion is in favour of the forceps as the safer, and the more powerfully extracting and compressing instrument and the one least likely to lead to injury in unpracticed hands. This is probably on the whole correct, but it must not be forgotten that the lever has been employed and has actually been preferred by men of great experience, that it occupies less space, that its extracting force can be applied over successive parts, instead of the whole head, and exerted in different directions. Its extractive power is really greater than ought ever to be fully employed, and it may be as early and as successfully introduced by skilful hands, as the long forceps can or ever should be. It seems therefore to possess superior powers for dislodging the head when arrested by an unfavorable position or slight deformity. It also appears much better adapted for employment than any unequal bladed instrument where the introduction of the second blade of the forceps cannot be accomplished without force. The instrument may be applied over the angle, the ramus or the symphysis of the lower jaw, over the mastoid process or any part of the occiput, according to the position of the head. There is great objection to the os frontis, on account of the danger of injuring the eyes of the child. Care must always be taken to employ it as *an extractor and not a lever*, for the latter description of force might occasion such compression on the par vagum and cervical vessels, as to produce convulsions and death of the child, and on the urethra of the mother, as may end in sloughing of that part of the neck of the bladder.

The following remarks on the use of instruments, which are taken from the able writer of whose practical instructions and unequalled records the Editor so frequently avails himself, admit of no abridgment without lessening their force and value.

"We must be guided as to the propriety of giving assistance, chiefly by the present symptoms and previous history, and not by the length of the labour; as some will suffer more in thirty hours than others in ninety. If our patient have had severe labours before or given birth to many children, we should not on any account permit her to remain so long in labour as if the case were otherwise. Generally speaking, so long as the pulse remains good, the bowels and bladder act well, the soft parts remain free from severe pressure and uterine action continues so as to cause the presenting part to descend ever so slowly, the patient having no pain in the abdomen on pressure, or local distress, the child at the same time being alive, as indicated by the stethoscope, I am satisfied, no attempt should be made to deliver with instruments, and that he who does so, wantonly exposes both mother and child to danger.

"A prudent use of instruments in the practice of midwifery, is of great importance; but the necessity alone of freeing our patient from impending or present danger should induce us to resort to them. In every instance, where practicable, previous to doing so, it is desirable a second physician should be consulted, in order to satisfy both the friends of the patient and ourselves, that we are doing what is essential for her safety."*

"I consider the forceps when used with prudence a most valuable instrument, but its utility is greatly lessened by the injury so frequently inflicted on the patient, by having recourse to it, where *no* instrument is *necessary*; but *much more so* by using it where in my mind, it is not only inapplicable, but highly dangerous to the patient's safety."

"The delivery of a female with the forceps, when the os uteri is fully dilated, the soft parts relaxed, the head resting on the perinæum or nearly so, and the pelvis of sufficient size to permit the attendant to reach the ear with the finger, is so simple, that any individual with moderate experience, may readily effect it. I have no hesitation in asserting, that to use it under any other circumstances, is not only an abuse of the instrument, but most hazardous to the patient. It is from being thoroughly convinced of these facts by long and extensive observation, that I consider the forceps quite inapplicable where the head becomes fixed in the pelvis, and that the ear cannot be reached by the finger, except by violence, in consequence of disproportion existing between the head and the pelvis, either owing to the former being unusually large or the latter under size; in most instances measuring little more than three inches from pubes to sacrum, and in others less than this. When we consider, that the blades of the *smallest* sized forceps used in Britain, even when *completely closed* measure from $3\frac{1}{8}$ to $3\frac{1}{2}$ inches, it is clear that were the bones of the pelvis denuded of their *soft parts*, there would not be space to admit of their application. The French forceps measures when closed from blade to blade, on the upper side $2\frac{1}{2}$ inches, and are about $\frac{1}{8}$th wider on the opposite side; meeting at the point of the blades to within $\frac{1}{8}$th of an inch. Were we even to overlook altogether the safety of the mother, where the child's head, which measures† $13\frac{1}{2}$, $14\frac{1}{2}$ or 15 *inches* in circumference is so compressed as it must be when the instrument is closed, there can be scarcely a hope of life. Of course where the pelvis is *roomy*, this compression of the head so as to *close* the forceps, is unnecessary and in such cases the child is uninjured. How is it possible with the forceps, to drag a child through a pelvis, where there is not space, except by *force*, to introduce (as is commonly said) a straw, or where the smallest flexible catheter cannot in some instances be passed into the bladder? The results I have witnessed, from such practice were most distressing; in some the neck of the bladder or urethra either lacerated, or the injury by pressure from the forceps so great, as to produce sloughing and consequent incontinence of urine: in others, the recto-vaginal septum destroyed, either of which renders the sufferer miserable for life; and in two cases where the mouth of the womb was imperfectly dilated, so much injury inflicted on this part as to terminate in death. Such melancholy consequences strongly show the necessity of having recourse to the forceps with great caution, so as to avoid the abuse of an instrument, which when judiciously applied, is occasionally most beneficial. Almost all the unfavorable results may be prevented, by using this instrument only when *necessary* for the *safety* of the patient, at the same time attending to the circumstances already stated."

"Much has been written to induce practitioners to use the forceps in preference to the crotchet; but in my opinion the one never can be substituted for the other without exposing the patient unjustifiably to great danger; as where the case will admit of the forceps according to the rules stated by those who have had most experience, no man possessing a practical knowledge of midwifery, would ever think of using the perforator; and he who uses the forceps under other circumstances, will find reason to regret much he had the misfortune to do so, and his patients will regret still more they had the misfortune to employ him."

"The only means of effecting delivery, where the disproportion between the head of the child and the pelvis is so great as to prevent us reaching the ear with the finger, is by reducing the size of the head, and using the crotchet. This, however, is an operation that *no inducement* should tempt any individual to perform, except the imperative duty of *saving* the *life* of the *mother* when placed in imminent danger. I have no difficulty in stating, and that after the most anxious and minute attention to this point, that where the patient has been properly treated from the commencement of her labour; where strict attention has been paid to keep her cool; her mind easy; where stimulants of all kinds have been prohibited and the necessary attention paid to the state of her bowels and bladder; that under such management, the *death* of the *child* takes place, in laborious and difficult labour, before the symptoms become so alarming, as to cause any experienced physician to lessen the head. This is a fact which I have ascertained beyond all doubt by the stethoscope; the use of which, has exhibited to me the great errors I committed, before I was acquainted with its application to midwifery, viz. in delaying delivery, *often*, I have no doubt, so as to render the result *precarious* in the *extreme*, and in some cases, even *fatal*."

"When uterine action continues regular and strong for twelve or twenty-four hours after the os uteri is dilated or nearly so, without the child's head making progress; it being firmly compressed in the pelvis, not leaving space for the introduction of the finger to feel the ear, or in some, the passage of a catheter into the bladder; the urine perhaps retained from severe pressure on the urethra; or when removed bloody or very scanty and of a deep colour; the patient complaining of acute pain on pressure, in any part of the abdomen, the pulse being at the same time hurried, and the strength failing; these are symptoms indicating the use of the perforator, and these being *urgent* or *otherwise* should make us deliver sooner or later. The difficulty in such cases is caused by a disproportion between the child's head and the pelvis; and except where this is very great, no individual can foretel whether the uterine action may be sufficient or not to expel the child; therefore the most certain proof we can have of such disproportion existing is, the head remaining stationary for a number of hours after the dilatation of the mouth of the womb, uterine action during this time continuing strong. This is a more certain proof than any derived from the most accurate examination; for though in this way, we may be able to inform ourselves with tolerable correctness, as to the size of the pelvis, yet the size of the child's head, its degree of ossification, or the amount of compression it may undergo from uterine action, never can be correctly ascertained. Let it be carefully recollected, at the same time, that so long as the head advances *ever so slowly*, the patient's pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of the urine; interference should not be attempted unless the *child be dead*."

"I know of no case where the advantage derived from the use of the stethoscope is more fully demonstrated, than in the information it enables us to arrive at, with regard to the life or death of the fœtus, in the progress of tedious and difficult labours. It is, in my opinion, one of the greatest improvements that has been made in the practice of midwifery; and what adds much to its value is, that an acquaintance with its application is not so very difficult of acquirement, to any one whose hearing is unimpaired; it being only necessary, that the ear should be accustomed to the sounds for some time, to be able to apply it with advantage. Heretofore we were in a great measure ignorant of the time at which death took place; and the practitioner imagining the child alive from want of satisfactory evidence of its death, delayed interfering until his patient was in the greatest possible danger; whereas had he been assured the child was dead, he would have delivered her before life became actually hazarded, and thus prevented her not only enduring for hours, but even days in some instances, the most torturing pain, the result of which continued suffering was not unfrequently death, or what was perhaps worse than death, extensive sloughing of the urethra or of the recto-vaginal septum, establishing a communication between these two cavities reducing the unfortunate sufferer to a state of extreme misery. How often have I known patients permitted to endure the most urgent distress for a period of 40, 50, 60 or 70 hours; and at the expiration of this time of sorrow, giving birth to a child evidently dead for hours and occasionally putrid."

"I cannot therefore too strongly impress on the mind of the practitioner, the absolute necessity of making himself acquainted with the use of the stethoscope, as a mean of detecting the death of the fœtus with accuracy, considering it as I do of the utmost importance in these cases. I can safely say I should feel most unhappy without it, in any attendance where the labour was protracted or severe. I am satisfied there is no mode of diagonosis more truly useful, and feel convinced that all who accustom themselves to its application will eventually agree with me in this opinion. Dr. Evory Kennedy's treatise on the stethoscope as applied to midwifery, contains every information necessary to acquire a competent knowledge of this instrument, and at the same time most convincing proofs of its utility."—(Collins, P. 8.)

TABLE ILLUSTRATING THE FREQUENCY AND KIND OF ARTIFICIAL, ESPECIALLY INSTRUMENTAL, DELIVERY.

Authority.	Total	Ergot	Version	Forceps	Lever	Perforator
Boer	18,642		51	35		13
Clarke	10,387		48	14		49
Bland	1,897		9	12‡		8
Reid	3,250		20	20		15
Merriman	2,947		21	21		9
Mr. Lever	4,663	16	28	9§	12	25
Messrs. Colgate and Holman, East Hothly, Sussex*	1,000	not stated	7†	4	none	none

* An agricultural district where no midwifes attend labours and nearly the whole population are attended by themselves or assistants.

† One premature arm case, one twin, one placenta pruvia, three shoulder, one accidental hæmorrhage.

‡ A single blade.

§ In three the long forceps.

* The instructions of Dr. Hugh Ley, whose early death obstetric science has reason to deplore, are so well adapted for soothing the patient's fears and obtaining her consent, that they are inserted. "When the symptoms demand the use of instruments it is right to explain to the friends the necessity and the grounds of their employment. This gives them the opportunity of having a consultation which is always desirable when the circumstances of the case admit. You should also prepare the mind of your patient by telling her that the time has now arrived for delivering her, that the head sticks in the passage, and that you are going to use a pair of artificial hands to fetch it. Show her first one blade of the forceps, and let her feel its smoothness and satisfy herself that it has no cutting edge, and then the other, but always separately. If the forceps are locked when she first sees them, they suggest to her mind the idea of a cutting instrument like a pair of scissars. You may then apply them gently over her closed hand, taking care not to press the blades too much so as to hurt her. In this manner you may soothe her fears, and when so explained they seldom create much alarm. Indeed, you will be much more often urged to apply them *when unnecessary*, than have their use objected to *when required*. Never employ any instrument *secretly*, that *is morally wrong*, and it is also unwise, because it deprives you of a certain amount of reputation, which always attends the use of instruments, and which may lead to your professional success. I know one individual who dates his first introduction to fashionable practice, from nearly breaking the jaw of a young baronet, by the use of the lever at a royal palace in a case, where he now doubts the propriety of his having employed any instrument at all." (Manuscript notes taken 1822—4).

† Dr. Joseph Clarke found that the average circumference of 60 male, and 60 female children born at the full time, was in males 14 inches, and in females $13\frac{5}{8}$ inches. The arch from ear to ear over the crown, was $7\frac{1}{4}$ inches in the males, $7\frac{1}{8}$ in the females. Of the 120 children examined there were only 6, all of which were males, where the circumference of the head exceeded $14\frac{1}{2}$ inches.

while recoveries are frequent on the Continent, where ecclesiastical influence encourages the patient to submit to the operation before the powers of the constitution are impaired, and before the parts have been exposed to the deleterious effects of pressure.

The first table presents an abstract of Dr. Churchill's researches, on the relative frequency of the operations of midwifery, and their respective fatality to the mother and child. The remaining tables exhibit an epitome of the practice pursued at the Dublin Lying-in Hospital under Dr. Collins, and at La Maternité by Lachapelle. These will furnish ample materials for study and reflection. They have been constructed with much pains, and with every possible desire to make "figures the representatives of facts." To ensure accuracy, minute attention has been paid to the details, which will account for slight variations from the figures published by Dr. Collins himself with reference to the entire number of præternatural presentations, to the presentations in arm and twin cases, and the use of the forceps in twin cases.

ABSTRACT OF DR. CHURCHILL'S STATISTICAL TABLES.

Authority Dr. Fleetwood Churchill's Operative Midwifery*	Total number of deliveries	Cases requiring the operation.	Proportion to the whole number of deliveries	Proportion of cases where the result was known to be fatal to	
				the mother	the child
Version	98,534	884	about 1 in 111½	11 in 169 or 1 in 15	182 in 542 or 1 in rather less than 3
Forceps	348,156	2,099	about 1 in 165	49 in 773 or 1 in 15¾	175 in 871 or about 1 in 5
Perforator	334,258	343	about 1 in 974½	52 in 251 or about 1 in 5	necessarily in all
Cæsarian section	unknown	409	unknown	181 in 409 or about 1 in 2¼	64 in 409 or about 1 in 3½
Section of the symphysis pubis	unknown	49	unknown	16 in 49 or about 1 in 3	19 in 40 or about 1 in 2

* In the Operative Midwifery, an enlargement and reprint of the papers originally published in the Dublin Med. Journal, Dr. Churchill has partly corrected the error alluded to in the remarks accompanying Pl. 53, by omitting the statistics of Baudelocque from his collection of French Records. Notwithstanding this alteration the same cases are still twice calculated, and the general results are seriously vitiated because the second table of Lachapelle which is not included, although it contains nearly the same number of cases, exhibits a less proportion of operations than the admitted table of Boivin which comprises the return of the first 5½ years of La Maternité and a large number of the 15,654 cases given by Lachapelle in her first table.

A TABULAR VIEW OF THE PRACTICE ADOPTED AT THE DUBLIN LYING-IN HOSPITAL DURING THE MASTERSHIP OF DR. ROBERT COLLINS (Nov. 1826, Nov. 1833).

(COMPILED FROM HIS PRACTICAL MIDWIFERY).

Women 16414	Women died 164(a)	Twins 240	Triplets 4	Children(b) 16663	Stillborn(c) 1121

						Vertex & presentations not otherwise specified	Face or Face to pubes	Breech	Feet	Shoulder
NATURAL DELIVERY 16451.(e)						15922	44	312(e)	172(e)	1(d)
ARTIFICIAL DELIVERY 212(f)	Manual	Manual extraction	15	Finger in the groin in lingering labour.				2		
				Placenta prævia.				1	2	
				Accidental hæmorhage.					1	
				Rupture					9	
		Version	41	Malpresentation.						33(g)
				Placenta prævia.		4				
				Accidental hæmorrhage.		2				
				Second of twin children.		1				
				Third of triplets.						1
	Instrumental	Blunt hook	1	Passed into groin.				1(h)		
		Forceps	24	Inertia.		10				
				Convulsions (*One a first child in twin case*).		7				
				Twins.		2	1(i)			
				Triplets.		2				
				Prolapsus of the cord.		1				
				Placenta prævia.		1				
		Lever	3	Inertia		3				
		Perforator	122	Interference desirable *on the part of the mother* where the labour was extremely difficult or the child dead.		74	5			
				Ruptured uterus.		19				
				Umbilical cord prolapsed and without pulsation		12				
				Convulsions		8				
				To facilitate delivery of the head in footling labours, where the child was already dead.				1	3	
		Lessening thorax	6	Impaction of child in the pelvis in neglected arm cases.						6
						146	6	5	15	40
Total 16663.						16,068	50	317	187	41

(a) CAUSES OF THE 164 DEATHS.

Rupture of the uterus or vagina.	32	Inflammation of the brain.	3
Uterine hæmorrhage.	11	Pericarditis	1
Effects of tedious and difficult labour	11	Acute Bronchitis.	1
Sloughing of vagina.	6	Hydrothorax.	2
Peritoneal inflammation (placenta retained).	4	Phthisis.	2
Convulsions.	2	Ulceration of intestines.	3
Anomalous disease.	12	Stricture of ditto.	1
Grief apparently.	1	Abscess in spinal canal.	1
Puerperal fever	59	Lumbar abscess.	1
Typhus fever	5	Diffuse cellular inflammation.	1
Hectic fever.	1		

(b) Dr. Collins seems to have omitted nine of the triplet children from his general total before quoted (16654). They have been included in this table. The presentations of the twelve triplet children were: Vertex 6, breech 2, arm 1, unstated 3. One of the triplet cases presented an epitome of operative midwifery, the first and second children being delivered by the forceps, and the third (an arm presentation) by version.

(c) Including 1 at 3 months.
„ 8 at 4 „
„ 33 at 5 „
„ 70 at 6 „

Making 112 not viable.

(d) A six months child where the breech descended with the arm.

(e) The children are considered to be delivered naturally in all cases that merely required rupture of the membranes and in all the breech and footling cases where nothing more than the *ordinary* assistance to favour and *accelerate* the delivery of the head was rendered.

(f) One or two cases of bringing down the feet of the child in footling presentations of twins are not included.

(g) In three arm presentations it became requisite to lessen the head to procure its delivery after version had been performed.

(h) The only breech case requiring instrumental aid. The child was very large and putrid.

(i) The second child was brought down with one blade.

A TABULAR VIEW OF THE PRACTICE PURSUED AT LA MAISON D'ACCOUCHMENS FROM MARCH 21, 1803, TO DEC. 31, 1820.

(Compiled from Lachapelle, Pratique des Accouchmens, vol. 1 et 2).

37,440 women gave birth to 37,895 children		Vertex	Forehead or face	Breech or Infr. extrem.	Shoulder	Undetermined	Total	Children: Born alive	Children: Dead
By natural efforts		35,087(a)	129	1,352	20(b)	766(c)	37,354	35,849	1,505
Artificially	Rectifying face or changing frontal into face presentation		9				9	9	
	(d)Version	98	27	36(d)	166	2	(d)329	246	83
	(e)Forceps	161	9				(e)170	131	39
	(f)Perforator	24	1	1(g)			(f)26		26
	Cæsarian section	3(h)		1		1	1 during life } 5 4 after death }	3	2
	Section of symphysis pubis	2(i)					2	1	1
		288	46	38	166	3	541	390	151
Total		35,375	175	1,390	186	769	(k)37,895	36,239	1,656

(a) In 23 or 24 the cord prolapsed and was replaced. In 7 or 8 the cord prolapsed but was not replaced. In 8 the pelvis was deformed the antero-posterior diameter at the brim being 3½ 3¼ and 3 French inches.
(b) Eighteen children premature and the remaining two putrid. One of these was born by natural efforts after long and unsuccessful attempts at version.
(c) *Many* of these (not *all* as stated in the table of presentations accompanying Pl. 44) were delivered before their entry into the hospital.
(d) The term version is used by Lachapelle wherever the introduction of the hand within the uterus is required in order to seize the feet. See also table of version cases.
(e) See also table of forceps cases.
(f) See also table of perforator cases.
(g) Perforation after version. The cord and hand descended along with the feet.
(h) One during life. Antero-posterior diameter, eighteen French lines. Died.
(i) For contraction of pelvis, one woman recovered (2¼ French inches) child died shortly afterwards. The other woman (2 French inches) died with her child. Both cases admitted of the less dangerous operation by the perforator.
(k) No account is given of the mortality of women.

TABLE EXHIBITING THE FORCEPS' CASES AT THE MAISON D'ACCOUCHEMENS WITH THE CAUSES ASSIGNED FOR THEIR USE.

Causes assigned	Presentations: Vertex	Presentations: Face	Total	Children: Alive	Children: Dead
Inertia or contraction of the external parts	86	7	93	74	19
Convulsions	19	1	20	18	2
Malposition Transverse presentations; face to pubes, parietal; reputed causes of inertia	17	1	18	15	3
Prolapsus Of the cord	16		16	12	4
Of the arm	1		1	1	
Contracted pelvis	15		15	7	8
Scirrhus of the cervix uteri	2		2	1	1
Rigidity of the os uteri	*2		2	2	
Obliquity of the uterus	1		1	1	
Hæmorrhage	1		1		1
Approaching death from acute disease	1		1		1
Total	161	9	170	131	39

* One case incision of the scirrhous cervix—one of cautious dilatation.

TABLE SHOWING THE CAUSES AND RELATIVE FREQUENCY FOR WHICH VERSION WAS EMPLOYED AT THE MAISON D'ACCOUCHMENS.

Causes for which version was employed	Vertex	Frontal	Face to pubes	Parietal	Face	Breech	Feet	Shoulder	Undetermined	Total
Malposition of child		4		3		1		162		170
Inertia or feebleness of uterus	31		1		7	20	8			67
Hæmorrhage	19							1	2	22
Prolapsus of the cord	15					2		1		18
Contraction of the pelvis	12						4	2		18
Convulsions	5								8	5
Prolapsus of arm and hand	3									3
Prolapsus of hand	1									1
Prolapsus of foot and hand	1									1
Contraction of os uteri	1									1
Recto-vaginal tumour	1									1
Sanguineous apoplexy	1									1
Cause not expressly stated					20	1*				21
Total of each presentation	85	4	1	3	27	24	12	166	7	329

* Second child of a twin case.

TABLE EXHIBITING THE PERFORATOR CASES AND THE CAUSES OF ITS USE AT THE MAISON D'ACCOUCHMENS.

Causes assigned	Presentations: Vertex	Presentations: Face	Both feet
Contraction of the pelvis (One version and two applications of crotchet after operation	*16		
Hydrocephalus (Natural delivery after perforation)	4		
Parietal presentation (Forceps after perforation of cranium)	1		
Transverse presentation. Inertia (One version and one application of crotchets)	2		
Inertia (Forceps after perforation of cranium)	1	1	
With one hand and the cord (Craniotomy after version of the fœtus)			1
Total	24	1	1

* From 2½ to 3 French inches. Many of these women arrived at the hospital after having been four or five days in labour and after ineffectual attempts had been made to procure their delivery.

END.